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ABSTRACT

This study examines variables that affect staff development in rural schools. It examines systematically delivered rural staff development intervention in 28 rural schools in five states representative of the Southwest--Arkansas, Louisiana, Oklahoma, New Mexico, and Texas. The study, involving 700 teachers, tests 18 hypotheses based largely on research, experience, and literature from non-rural settings. It examines 24 variables related to staff development intervention, in order to construct a predictive model of context variables supporting the use of effective strategies for staff training. Initial site variables tested were: average daily attendance, ethnicity, socioeconomic status (SES), number of teachers and administrators, selection of site, proximity to the nearest institution of higher learning (IHE), and a perceptual measure of site's instructional focus. Training variables included: administrative participation, incentives offered, time of day held, release time allowed, number of participants, source of trainer, and training observation. Teacher rate of implementation was measured with the following variables: method of selection for training, gender, grade level, and type of course taught. The study concludes that a number of variables have an effect on the rate that teachers implement new or improved strategies and behaviors following training. Eight predictors were found to account for 56.9% of dependent variable, including: (1) training time of day; (2) number of students at school eligible for free or reduced lunch (SES); (3) administrative participation; (4) nearness to an IHE; (5) incentive provided; (6) high school-level teaching assignment; (7) number of administrators in district; and (8) trainer from an IHE. The study recommends areas of further research. Approximately 100 references are included. (TES)

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AN ANALYSIS OF A STAFF DEVELOPMENT

INTERVENTION IN RURAL

SCHOOLS

by

GAYLA JUAN HUGHES LAWSON, B.S., M.A.

DISSERTATION

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

DOCTOR OF PHILOSOPHY

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AN ANALYSIS OF A STAFF DEVELOPMENT

INTERVENTION IN RURAL

SCHOOLS

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PREFACE

Without certain people in the personal, professional, and academic spheres of my life, this work would not be complete. The endurance, support, and caring of my husband and sons deserves special recognition and thanks. Without their continuous encouragement and sustaining help in a variety of ways, I could not have persevered.

I am grateful also to many professional educators, to SEDL for allowing my individual work with unused, valuable data, for the constant support of my valued colleague, María Torres, and for the multitude of others who contributed in various ways.

Although administrators, staff development providers (trainers), teachers, and students participating in the activity from which the data were drawn are anonymous in the content, their participation, cooperation, and interactions enriched the work, and are, therefore, greatly appreciated.

With attention to the academic area, I first thank Dr. Nolan Estes' encouragement to pursue the doctorate; next, thanks to Linda Frazer's expert help with statistics, and finally to my committee for their time and attention.

AN ANALYSIS OF A STAFF DEVELOPMENT
INTERVENTION IN RURAL SCHOOLS

Publication No. _____

Gayla Juan Hughes Lawson, Ph. D.
The University of Texas at Austin, August, 1989
Supervising Professor: Carole A. Veir

This study examines a systematically delivered rural staff development intervention in twenty-eight rural schools representative of the Southwest -- Arkansas, Louisiana, Oklahoma, New Mexico, and Texas. Involving 700 teachers, the analysis of 463 participants with 24 data sets (49 separate vectors used for the various levels within the qualitative variables treated individually) provides a predictor model of context variables that indicate significant support of implementation of the strategies targeted for training.

Teacher rate of implementation measured by the sum of lesson plans, logged activities, and attendance of training sessions was modified by a factor of preparedness as reported by participants at each site. Site variables were: average daily attendance (ADA), ethnicity, socio-economic status (SES) represented by students eligible for free or reduced lunch, number of teachers and administrators, selection of site, proximity to the nearest institution of higher learning (IHE), and a perceptual measure of site's instructional focus. Training variables were: administrative participation, incentives offered, time of day held, release time allowed, number of participants, source of trainer, and training observation. Teacher variables were: type of selection for training, gender, grade level, and type of course taught.

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CHAPTER ONE

INTRODUCTION

One-third of the students in the United States (approximately 10 million) attend the 12,000 rural, small school districts that comprise two-thirds of the nation's total school districts (National Center for Educational Statistics, 1980). The differences between rural districts are so extreme that one common definition of "rural" is, if not impossible, certainly impractical. At present there are at least three national definitions currently applied to "rural" for various purposes. The Census Bureau describes rural in terms of urban -- urban being places having 2,500 or more population, the rest being rural; the Department of Labor's definition of rural is a county having less than 2,500; and according to the Rural Development Act of 1972, rural is everything outside a city of more than 10,000 (a number expanded to 50,000 for grant and loan purposes). From a regional perspective, the definitional dilemma is not any clearer, regardless of which region in the United States is examined. Within the five states of the Southwestern region -- Arkansas, Louisiana, Oklahoma, New Mexico and Texas -- there are

several ways to define rural: by size; by economy; by density; and by isolation (proximity to urban centers or population). Paul Nachtigal, a rural researcher of renown, suggests that because the characteristics distinguishing rural from urban communities are not clear cut, "...they form a continuum of rural to urban, with communities falling at different points depending on their size, location, and cultural history" (Nachtigal, 1982). This approach supports the idea that there is a need to define rural from a narrower perspective, one that is neither national and collective, nor one that is all inclusive or generic. Descriptive definitions along the continuum suggested by Nachtigal may serve as markers in a more discreet typology of what "rural" is. This sort of typology could have significant value to the diverse rural educational entities as for multiple purposes, especially in designing school improvement efforts.

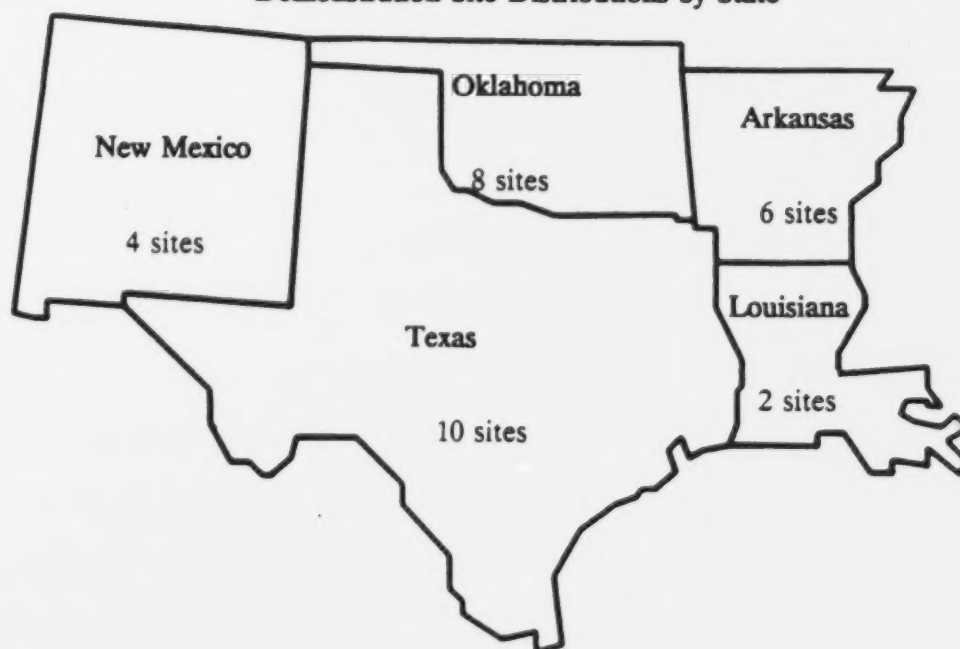
For the purposes of this study, an operational definition of small rural schools will be state-specific to each of the five southwestern states involved. Each definition, resulting from meetings held within each respective state to discuss possible assistance to its rural schools, represents a consensus of key educational decision-makers from that state. Arkansas determined that rural schools are those not in urban proximity and with no more than 750 students in the district. Louisiana's parish

organization precludes small rural districts (only two of sixty-six having as few as 2,500 students); however, the thirty-two districts in which 60% of the student body come from rural homes were designated as eligible. New Mexico designated rural districts as those with 500 students or less. Oklahoma has several definitions of rural for educational purposes, with 800 student population in the district as the criteria determined. In Texas where both larger land area and more populated districts containing predominantly rural students exist, 1600 average daily attendance (ADA) was the number selected for definitional purposes. The vast differences in definition are clear in Figure 1.1, showing a range from 500 to 2,500 ADA used to define small and rural schools in the various states of the region. When considering the actual sites considered in this study, the variation in size ranges from 72 students to 2,493 students; from a one building complex with Kindergarten to eighth grade to a multi-campus complex with six separate schools under a single administration. Figure 1.2 shows the states of the southwestern region utilized in the research and the number of demonstration site schools in each state. School funding formulas, structured according to the type or size of the school district served, also provide a variety of understandings and interpretations of what "rural" means for educational purposes. Generally established

Figure 1.1
Definitional Numbers

State	Number of School Districts	Number of Rural Districts	Student Enrollment Cutoffs
Arkansas	347	109	750
Louisiana	66	32	2,500
New Mexico	88	52	500
Oklahoma	613	137	800
Texas	1,061	863	1,600

Figure 1.2
Demonstration Site Distributions by State



before or during the 1970's after a decade of unprecedented growth in rural America, many of these funding configurations are still being applied at a time when changing rural demographics reflect high poverty levels instead of affluence of the 1970's. Currently, large proportions of the rural population include underdeveloped human resources exemplified by low educational attainment, high functional illiteracy (Fratoe, 1978), and high school dropout rates especially for minorities, whether immigrant, migrant, or resident, especially in the South and Southwest (Deavers, 1987). The criteria upon which these formulas were originally based has changed necessitating research to define the rural contexts as they now exist.

Reflected by unchanged funding policies, broadly held misconceptions about what rural America is like, along with an informational lag in addressing the changing nature of rural America's schools and economies, are additional factors that have not had an impact on policies or educational mandates that are generically applied to all school districts in the state or nation without consideration of appropriateness or feasibility. Perhaps the misconception (that technological advances, improved and immediate communication capabilities, and accessible global transportation have equalized access to the fruits of progress for all

communities equally) has influenced policies and actions to be applied generically to all educational entities. A generic approach in applying generic improvement remedies to all schools has had a negative effect on most of the rural schools and communities in the United States (Sher, 1983a; Herriott, 1980; Monk & Haller, 1986; Nachtigal, 1982). Diversities in definition, funding, and understanding of what rural is has compounded the complexity of the needs and/or concerns of rural schools and their administrators as they address improvement measures. These vast differences necessitate improvement approaches that are appropriate to the needs and conditions of rural schools. As stated by Muse (1984),

"Rural schools are different in many respects from non-rural schools, but rural and urban educators and communities alike share the desire to provide excellence in education so that their youth can meet the demands of a complex and changing world."

In 1986, the United States Congress appropriated \$4 million to initiate an effort to assist rural education, a charge given to the nine existing regional research and development laboratories as directed by the Office of Educational Research and Information funded by the Education Appropriations Act of 1986. Although the major part of the funding was appropriated on a non-competitive basis, the laboratories were required to submit proposals with specific guidelines of their projected work for

rural school improvement. While the maximum time for improvement efforts could span two years, the Southwest Educational Development Laboratory (SEDL), serving Arkansas, Louisiana, Oklahoma, New Mexico, and Texas planned an intense one-year project, to be supplemented with competitive funds. An additional year of funding was provided by Congress effective June 1, 1988.

In preparation for initiating the anticipated legislated effort, a National Rural Task Force was convened to plan an effective approach to assess needs of rural educators. The task force, representative of the nine geographic laboratories, conducted a random survey of 9,300 rural educators, including superintendents, principals, teachers, and school board presidents. Drawing responses from 26% of the sample, a list of forty items was prioritized using a five point scale to measure (1) great need; (2) fairly strong need; (3) moderate need; (4) little need; or (5) no need for improvement. The evidence of this survey was combined with other data: views of representatives of rural and national associations gathered at forums, hearings, and planning meetings; opinions of experts in the field; hard data from several sources such as census and economic reports; and laboratory experiential information. The two issues that ranked highest in need of improvement by respondents from the

Southwest were concern about: 1) academic performance of students from low income families (whose ranks are increasing disproportionately in relation to other populations); and 2) students' thinking and reasoning skills (Arends, 1987). Three other highly ranked priority needs dealt with teacher appraisal, staff recruitment/retention, and inservice or staff development. After careful consideration of these issues from state-specific perspectives, SEDL management decided that improved staff development seemed the most likely target for effective and universal attention. The abstract of SEDL's proposal clearly and concisely describes the effort.

"SEDL's Core activities under the Rural, Small Schools Initiative focus on teacher staff development as a key point of leverage, with SEDL (1) training trainers from intermediary agencies and / or organizations in research-based techniques for delivering effective staff development that assures classroom change, (2) providing R&D-based and best-practice-based resources in critical content areas, and (3) following through with technical assistance for the trainers in both process and content. This focus is complemented with a program of regional information gathering and sharing that identifies trends and promising practices in rural, small schools and heightens practitioner awareness of school improvement options that are appropriate for their particular circumstances" (SEDL, 1987).

Some of the data from the effort described above will serve as a basis of this study which goes beyond the scope of the laboratory's proposed effort

to examine the project in contextual terms. The intervention based on a process called the Consumer Validated Process (CVP), patterned after a process model already designed and tested in urban Murfreesboro, Tennessee by Robert Eaker and James Huffman (1980), presented an ideal possibility to test in a rural setting. Eaker and Huffman showed how educational research could be successfully implemented in city classrooms. The model, used for several years in large districts, served as the vehicle for the staff development intervention with the intention of providing an effective way to improve teaching of thinking rapidly, with minimal costs, and using existing delivery systems. The Eaker-Huffman model for Consumer Validated Process, with modifications, was used in thirty rural schools to implement research-based strategies for improving the teaching of thinking at the classroom level.

PURPOSE AND UTILITY OF THE STUDY

The dual purposes of this study are (1) to provide a predictable description of rural school context variables that are supportive of staff development for school improvement, and (2) to provide a qualitative, empirical study of a large scale rural intervention. While definition of a predictable, supportive context for rural school improvement through staff

development is the primary purpose of this study, the work can also provide a basic foundation of research for similar interventions that can be used to assist rural schools in face of the triple threats of shrinking resources, increasing "at-risk" populations, and increased external mandates for improved and expanded services.

A third use for this study may likely be extrapolated from its findings. As new ways to address urban educational problems are considered, especially attempts to reduce large school populations to smaller "schools in a school" (Drake & Roe, 1986), what is supportive of improvement in small rural settings may have beneficial application to city schools. This study may establish a qualitative description of a supportive environment in a small school that can be used in a comparable way in improvement efforts as certain urban schools are being restructured according to the smaller organizational framework of a "school in a school" concept (Monk & Haller, 1987).

Similarities in problems and their effective solutions may be more significant than differences in populations and locations; therefore this research should verify if contextual similarities actually exist in rural and urban staff development improvement efforts -- what contextual commonalities there are in these school improvement efforts, if any, and,

if size and setting are significant determinants.

STATEMENT OF THE PROBLEM

Effective staff development has always been a critical function of educational agencies, local to national, urban, suburban, and rural. In light of recent reform movements and mandates demanding improvement, the need for efficient, effective staff development has increased dramatically in rural areas that frequently face teacher shortages and difficult competition with their urban and suburban counterparts in the teacher market.

Most current research on effective schools, effective teaching practices, excellence efforts, cognitive development, change theory, and staff development has been focused on city schools. With over 1,300 rural school districts (1,193 considered small) in the Southwestern region serving one-third of the student population, definitive research is needed to provide a basis for improvement in those diverse, frequently resource-bound schools. Whether commonalities between urban and rural educational improvements exist or not, context variables that support rural school improvement efforts must be defined by qualitative research that considers the diverse natures/cultures of those schools for immediate

assistance for improvement and compliance to mandates. By examining contextual variables of this intervention, predictions for conditions supportive to other successful improvement efforts can be made. Many rural populations are suffering educational disadvantages, and most rural districts face immediate dilemmas as a result of either mandated improvement efforts/changes or economic pressures (Nachtigal, 1982). In the competency-test related comparative drives by states and or public pressures to evaluate schools with a single measure, many rural schools are not reaching the required level of effectiveness set by public policy. Although consolidation may serve as a solution in some areas, it is not feasible in many others because of distance or remoteness; therefore improvement is the only viable alternative. The most direct way for school improvement to occur is at the classroom level; therefore, improved teaching that can be accomplished effectively, efficiently, and permanently holds great promise for rapid solutions to improved educational effectiveness.

Empirical research on rural education is limited mainly to pre-1970, pre-reform legislation, pre-technology focus, pre-demographic shift, and pre-agricultural decline. Additionally, during the most recent tide of educational reform and improvement, generically affecting all schools,

little has been done in the area of rural research (DeYoung, 1987 and Wood & Kleine, 1987). Effective school research, teacher effectiveness studies, and staff development innovations have concentrated on large districts. Before the 1986 Congressional rural initiative, the focus of research, assistance, resources, and funds had been on urban centers, evidenced by the list of schools studied in the publication of the most recent Carnegie report, An Imperiled Generation (1988). The substantial body of educational research produced during recent years has neglected rural schools, almost none occurring in the Southwest, even though these rural, small schools face the same reform mandates, societal pressures, and shrinking resources that urban schools do. The urgent needs of urban school are receiving help drawn from a wealth of research that provides a solid base for general school improvement (including staff development) and change in urban and suburban schools. Rural schools, isolated and ignored by researchers for many years, have now garnered some attention and have an urgent need for research so that the desired/required innovations or interventions can be effectuated. The analysis of a large scale rural intervention in the Southwest done here intends to provide that needed understanding, providing in small measure basic empirical research to measure, define, describe, qualify, and design approaches

useful for rural school assistance. Predictors or correlates need to be identified to show what combination of variables contribute most to teacher use (classroom implementation) of research-based and proven craft-based strategies in rural classrooms for school improvement.

HYPOTHESES

A large body of staff development theory provides a frame of reference for a general mode of analysis of the practical events of the intervention under study. As that theory guides practical and rational decision making by providing the analytical tools for problem solving, alternative solutions to pragmatic staff development problems may be found by posing generalizations in the form of hypotheses that may then provide workable answers to problematic needs. Deducing consequences and implications of those hypotheses and then testing them is the ideal scientific method of the theorist. In this case, control that would be desired in a more clinical approach of experimentation will not be possible since the intervention studied occurs in the real world of rural schools.

In an effort to determine what equation best describes a setting supportive for systematic and effective staff development designed to

promote improved teaching of thinking intended to result in improved student achievement (the normal measure of cognitive developmental growth), a regression analysis will be conducted with multiple variables. Some of these variables alone may have little relation to the overall effectiveness of the intervention, but in combination with other variables may provide a predictive assistance for planning improvement strategies. The following individual hypothesis statements will be tested in the regression analysis and may be reformulated as a result of the maximum correlatedness of a variety of combinations of the factors considered.

General hypothesis: A number of contextual variables, related to teachers, school, training, and trainers, (ie. number of students, grade level taught, time of day of training, selection of participants for training, and other related elements) have a correlated effect on the rate of teacher implementation of the strategy being transmitted in training. The relationship of these elements can be combined in a formula to predict the best combinations that are supportive to staff development interventions for improvement.

For the purposes of this study, several of the hypotheses are formulated on the basis of an extensive body of research done in urban or suburban settings, which will be addressed in the literature review in

Chapter 2. The variables consider either teacher, site, trainer, or training variables. Multiple consideration of possible combinations of these variables will be examined through correlation and regression statistics. The hypotheses to be tested are grouped individually according to the following classification for consistency:

Teacher related

Hypothesis 1: Rate of teacher implementation of a new strategy varies inversely with the grade level taught.

Hypothesis 2: Rate of teacher implementation of a new strategy varies according to whether type of courses taught are academic or non-academic.

Hypothesis 3: Rate of teacher implementation of a new strategy varies according to gender of the participant.

Hypothesis 4: Rate of teacher implementation of a new strategy varies according to how teachers were chosen for training (ie. volunteer, mandated, or selected).

School related

Hypothesis 5: Rate of teacher implementation of a new strategy varies inversely with the size (student population, ADA) of the school.

Hypothesis 6: Rate of teacher implementation of a new strategy

varies inversely with the percentage of ethnic distribution of student population.

Hypothesis 7: Rate of teacher implementation of a new strategy increases inversely with the number of students eligible for free or reduced lunch (a socio-economic status indicator, SES).

Hypothesis 8: Rate of teacher implementation of a new strategy increases with the presence of administrative participation in the training (Harris, 1985).

Hypothesis 9: Rate of teacher implementation of a new strategy increases with the presence of a positively perceived effectiveness measure of the instructional focus at the school.

Hypothesis 10: Rate of teacher implementation of a new strategy increases with the distance of the school from a four year institution of higher education.

Hypothesis 11: Rate of teacher implementation of a new strategy varies according to how the site was selected for participation in the training (Hoy & Miskel, 1987).

Trainer related hypotheses:

Hypothesis 12: Rate of teacher implementation of a new strategy varies inversely with the nearness of the trainer to the school, ie. greater

implementation with school-based trainer, less with state department trainer (Drake & Roe, 1986).

Training related

Hypothesis 13: Rate of teacher implementation of a new strategy increases with the presence of an incentive for the training (Berman & McLaughlin, 1978).

Hypothesis 14: Rate of teacher implementation of a new strategy varies inversely with time of day of the training (Gall & Renschler, 1985).

Hypothesis 15: Rate of teacher implementation of a new strategy increases when training is conducted during release time (Gall & Renschler, 1985).

Hypothesis 16: Rate of teacher implementation of a new strategy increases with the size of the group participating in the training.

Hypothesis 17: Rate of teacher implementation is consistent with final evaluation of level of preparedness by participants of site group.

Hypothesis 18: Rate of teacher implementation of a new strategy is affected by a combination of the above hypotheses.

These hypotheses will be used in multiple combinations and tested for significance in combinations that include the best predictors from the categories, teacher, school, training, and trainer, as evidenced by the

regression line (alpha).

These eighteen hypotheses will be examined in relationship to teacher use of each strategy for improved teaching that is trained during the staff development intervention as measured by a formula designed to capture the elements or documentation of implementation (Eaker & Huffman, 1980). Classroom application of the strategies is indicated by the components of the formula that is the summed total of number of lesson plans submitted (using the trained strategies), number of implementation activities logged, number of training sessions attended, and modified by a measure resulting from final evaluation of the preparedness level at each participating school. This formula is shown below for clarification.

TEACHER RATE OF IMPLEMENTATION

$$Y = [P + L + T] E$$

Y = predicted rate of implementation

P = number of lesson plans submitted during training

These plans will be analyzed and rated by an expert trainer with a scale of 3 to 1 points explained further in Chapter 3.

L = number of logged implementation activities

T = number of training sessions attended

E = rate of evaluation of teacher perception of preparedness to implement strategy

ORGANIZATION OF DISSERTATION

This dissertation follows a traditional organization containing five chapters. Chapter 1 introduces the study, providing background, definitions, need, purpose, utility, organization, and limitations. Chapter 2 is a review of literature on rural education, staff development both rural and general, school improvement/innovation, and to a limited degree literature pertinent to the improved teaching of thinking. Chapter 3 describes the intervention, selection of sites and trainers, delivery of training to trainers, instrumentation and documentation of the intervention, and the methodology of the study, concluding with a description of the statistical analysis and methods used to conduct the examination of data.

The results of the regression analysis are covered in Chapter 4, including an examination of cases where significant deviation occurred. Chapter 5 presents summary and conclusion information with recommendations for application of the findings and suggestions for further research.

LIMITATIONS

Two major limitations are present in this study. First, since limited research of rural interventions such as the one researched in this dissertation exists, an appropriate comparative base is not available (Wood & Klein, 1987). Most comparative rural data that might be relevant has been drawn from extremely limited samples in which generalizability of findings is not reliable (Wood & Klein, 1987; DeYoung, 1987). This limitation will be minimized in an attempt to use the thirty sites as possible comparative bases. By focusing especially on the outlier sites where teachers consistently show high deviation from expected (predicted) implementation, an attempt to present further clarification and explanation with additional qualitative data will provide internal validity through a limited case study approach.

A second limitation is inherent in any large scale staff development intervention such as this where multiple trainers deliver the training. Style, rapport with participants, experience with the content of the training are variables that are beyond the control of the project, yet are possible variables that may have a limited effect on the intervention, even though

all training uses the same research-based content, materials, time lines for presentation, and training of trainers.

CHAPTER TWO

REVIEW OF THE LITERATURE

To assist rural schools in their efforts to improve instruction through staff development, an effort is being made in this study to predict and describe context variables that are supportive to staff development interventions. If, as some rural research suggests, strategies for improving small, rural schools must be different than those for non-rural schools, those differences need to be delineated and documented (Helge, 1984).

The general body of literature on rural education is interwoven throughout this review of several bodies of literature in order to establish (1) what constitutes good staff development in general; (2) what is known about staff development in rural schools; (3) what is known about rural interventions; (4) what is known about basic improvement or change in general school contexts; and lastly, (5) the literature dealing with the improved teaching of thinking since it serves as the content for the staff development intervention to be analyzed.

From the several recent surveys of rural research, De Young's statement seems best to convey the general picture of that body, "Most rural education specialists writing in the area seem in agreement that no

one knows much about what works in rural education" (1987, p. 137). Rather than suggesting a research agenda, De Young concludes his commentary on the status of rural education research by reaffirming that diversity, uneven quality, and mixed agendas undergird what research exists, and, offers his work as a resource to those pursuing the endeavor further. Other investigators of the research offer more specific recommendations for further investigation. While most tend to agree that rural education has not received a sufficient share of research attention if the rural schools are going to achieve their full potential, not all agree on the priorities for that research. There are common threads of interest, however. In 1983, of the nine most pressing questions drawn from a poll of the research committee and executive board members of the Rural Education Association, staff development and professional support surfaced as priorities (Barker & Muse, 1983). Rural educators queried two years later rated staff training needs among the top eight clusters of 46 items (Helge, 1985). Staff development and inservice were among the top five concerns in the Arends survey (1987). An underlying assumption is that when staff development is effective, change will occur (DuFour & Eaker, 1988); therefore, an understanding of change and how change is fostered is another important area for investigation.

CHANGE AND IMPROVEMENT

The two ideas that "bigger is better" and that there is "one best model" are quickly losing favor as educators discover that curvilinear relations to size apply to schools and that diverse cultural organizations and individuals need diverse treatments (Nachtigal, 1982). These revelations hold great promise for rural schools in an age that is leaving behind the necessity of centralization brought on by industrialization and mass production. As the information and service age emerges, the rural scene that includes **two thirds** of all school districts and approximately **one third** of the classroom teachers in the public schools of the nation may offer the best solutions for accommodating both diverse and multi-option social and economic possibilities (National Center for Educational Statistics, 1980). Considering that rural schools hold this promise to the American society is a positive way to approach the challenge of enabling those schools to improve and become more effective, rather than holding on to the deficit model attitude that improvement is aimed at bringing them "up to standard." Regardless of the perspective for change, effective ways for designing and managing that change are necessary.

A number of variables have been identified as having influence over

change in rural schools. Most concisely put by Herriott (1980), these characteristics include: 1) tension between stability and change in the community; 2) the multiple functions that rural schools perform; 3) the population density, size, geographic dispersion of the district; 4) consolidation circumstances and recentness; 5) economic base (limited and/or precarious); 6) fear of federal control (colonialism); 7) the heterogeneous nature of the district population; 8) reservations held by community regarding educators' professional license; and 9) the shifting balance of authority/power among school boards, administration and teachers. Several of the demographic features among these characteristics are to be tested by this study, with the understanding that description of only the instructional side of a small rural school cannot present an accurate picture of the reality of its context (Nachtigal, 1982).

Trends in the research on change have shifted from a focus on dissemination and adoption of the change toward an emphasis on implementation of the intervention (Berman, 1981). At the same time, literature on rural schools indicates that the aspect of change currently receiving the most attention is the lack of opportunity for professional development of teachers (Baker & Ambrose, 1985; Fullen, 1982; Massey & Crosby, 1983; Putnam, 1986; SEDL, 1987; Sher, 1983b).

Considering the two preceding facts, one might conclude that the implementation of a rural staff development innovation has significance to both directions of research.

Since implementation seems to be the element of intervention that is now drawing the most attention in the research on change within the environmental context of a particular educational organization, it follows that the rural context presents an excellent spectrum for study, especially if rural classrooms are to become more effective along with their urban counterparts in current reform movements. While context is an important part of any innovation, the importance of the human resource element must not be underestimated. The key to quality rural education and to making a delivery system work is the local teacher (Sher, 1983a). Staff development for individual teachers has been shown to have little impact on school improvement. On the other hand, group efforts have positive results (Joyce & Showers, 1988). A rural Vermont research-based innovation targeted groups of educators within the school where continuously maintained records indicated that an instructional improvement effort, mainly presented by the public school staff through team training, was both effective and lasting ("Ideas that Work," New York State College, no date). Another study, intent on describing

conditions that teachers confronted in effective schools located in rural settings, concluded that teachers in such schools were committed to professional growth and were supported by colleagues, administration, and the local board, but not without difficulty presented by distances, large cost per capita, logistics, lack of staff development personnel and other factors relative to the rural context (Matthes, 1988).

The importance of local support is reemphasized by Nachtigal's (1980) admonition that a link between knowledgeable professionals -- the local people -- and educators is vital in order to build relationships of trust and commitment that foster implementation of educational improvement. The innovations studied by Newton (1987) confirm this idea since he found that successful implementation depended upon strong administrative support and commitment at the district level as well as ongoing assistance from local and external facilitators. Going on to describe that support, his factor analysis indicated that the activities of change facilitators clustered around nine areas, two of which were support for teachers and implementation assistance. The support for teachers during a change process can be manifest in a number of ways, but one clear way is through school administrative support, a topic addressed again later within the scope of context of training.

The rapid changes occurring in the rural economic sector, let alone the world of technology and the growth of the knowledge base for curricular needs, demand that today's rural administrator seek opportunities for sources of professional development and inservice for his/her staff, an effort that continuously brings about change. This, in turn, necessitates his/her responsiveness to change. A positive attitude toward the change can be generated by an administrator's constant visibility during the time of transition. That presence and assistance can alleviate anxiety while communicating that the change is a valued improvement (Ducharme and Fleming, 1985). In an extensive look at educational change, Dalin (1978) suggests that interacting factors within the dynamics of change processes in education can be categorized under four headings: the educational setting, the environment (parents, the economy, etc.), the innovation itself, and the change strategy. With that in mind, it seems appropriate to consider the innovation to be studied in this intervention, which will necessitate a review of staff development in the general educational setting and in the diverse rural environments.

STAFF DEVELOPMENT

Among the providers of professional development for educators, there is frequently dissent about the meaning and/or the differentiation between inservice and staff development. To avoid any misunderstanding or confusion, both terms will be used interchangeably in this study to mean any approaches used to improve (or cause growth) in the educator's craft and repertoire of knowledge, understandings, strategies, techniques, etc. that are used in the pursuit of his/her assigned responsibility for causing student learning. Simply put, "any training activity that attempts to help teachers improve teaching skills" (Sparks, 1983). An association of use of the word "inservice" with an attitude of "repair service," indicating an attitude of a deficit model is frequently encountered in the literature (Harris, 1985); whereas, staff development is more often used when referring to continuous processes that deal with growth, extension, and motivation. Regardless of those associations, the two terms will be used interchangeably to refer to the broadest general understanding of school staff/faculty improvement efforts.

Formative searches for relevant research on rural staff development revealed that limited outlets of information exist in this field. Of 197

citations on staff development from the Clearing House on Teacher Education only four studies were conducted in rural schools, none of these in the Southwest (AACTE, 1987). Presentations of papers at conferences concerned with rural issues add to this limited body with what is most current, yet these studies may not be totally representative of the work being conducted. Similar efforts done in remote areas by individuals either not affiliated with the national organizations or possibly without means of sharing such information remain untapped for review.

The scantness of research studies on staff development in rural schools in data banks is only one dimension of the problem of locating sufficient, relevant information. Another complicating factor is that most school data are not labeled by rurality but rather by size in terms of student population. Frequently what is small in the research is not rural; therefore, when looking for data by school populations, identification is problematic. The research that does exist in this area seems to be unified in touting the importance of further qualitative and extensive study of staff development in rural contexts (Peter, 1988; Wood and Klein, 1987).

Three major staff development difficulties in rural schools are summarized by Lundsgaard (1983) as: (1) no full time personnel for staff development; (2) problems with multiple class preparations, scheduling

and other logistics; and (3) perceptual attitudes related to such items as budgetary constraints. These three basic difficulties need to be considered in planning staff development for rural schools. Along with those difficulties are the extremely diverse conditions and needs by groups of rural schools. The very diversity that makes generalizations about rural schools difficult, however, is what must be considered in addressing staff development needs. As suggested earlier, the use of a typology of rural schools may be the best way to address or suggest effective plans for those schools rather than run the risk of tailoring programs that may appear condescending to some and perhaps discriminatory to others (Wood and Kleine, 1987). Wood and Kleine (1987) conclude that the literature on staff development in rural schools "tends to be more prescriptive than empirical and more hortatory than analytical." The literature base is rapidly growing; and, although it still does not provide much support in the design of professional development for rural educators, it does provide some direction and insight about what might be drawn from the larger field of general staff development.

The survey of ample, notable work on staff development done in urban and suburban (nonrural) schools provides important criteria for what is effective at many levels and for varied purposes. An historical

perspective of the search for what is effective in staff development is provided by Wood's (1987) recent critical appraisal of rural staff development for a proposed research agenda. Late in the 1970's, a shift of emphasis from "attitudes about" to "effectiveness of" staff development was evident, perhaps a result of the effective schools research. Strong statements supporting the idea that (1) staff development is the key to change (Berman & McLaughlin, 1978), and (2) that teaching rather than teachers (who were convinced that the staff development currently in effect was not very effective) should be the focus for development (Bloom, 1981) seemed to spawn a flurry of research related to staff development. Like the search for characteristics of effective schools, this research sought to find indicators of staff development effectiveness. It was quite productive work.

Commonalities of ninety-seven reports or studies reviewed by Lawrence (1974) were summarized succinctly by Wood (1987). Paraphrased here, the nine are:

- (1) Programs in school settings influence behavioral and attitudinal changes better than those held elsewhere.
- (2) Greater success occurs in school-based programs where teachers participate as planners and helpers to their peers, assisting the outsider-deliverers.

- (3) School-based programs emphasizing self-instruction by teachers have a strong effectiveness record.
- (4) Programs allowing for individualization or differentiation of activities are more likely to accomplish set objectives than those having common activities for all.
- (5) Programs placing the teacher in active roles are more likely to accomplish set objectives than those with teachers in receptive roles.
- (6) Objectives are more likely accomplished when demonstrations, supervised trials, and feedback are emphasized.
- (7) Programs where teachers share and provide each other assistance meet objectives more than those where teachers do separate work.
- (8) Benefit to teachers is more likely when the development is linked to general school plans/goals rather than single unrelated workshops.
- (9) Teachers benefit more when they can set their own goals and activities rather than when all is pre-set or fixed.

Although Lawrence's review was not accepted by many because of methodological imperfections in the reports/studies covered, the commonalities have found a great deal of support by more recent, acceptable, empirical research. The supporting studies are shown by the following:

- (1) Programs in school settings influence behavioral and attitudinal changes better than those held elsewhere (Hoover et al, 1989);
- (2) Greater success occurs in school-based programs where teachers participate as planners and helpers to their peers, assisting the outsider-deliverers (Joyce & Showers, 1988);
- (3) School-based programs emphasizing self-instruction by teachers have a strong effectiveness record (Joyce & Showers, 1983 and 1988; Harris, 1985; Herriott, 1980);
- (4) Programs allowing for individualization or differentiation of activities are more likely to accomplish set objectives than those that have common activities for all (Joyce & Showers, 1983 and 1988; Harris, 1985; Herriott, 1980);
- (5) Programs placing the teacher in active roles are more likely to accomplish set objectives than those with teachers in receptive roles (Knowles, 1975; Brookfield, 1986; Moore, 1988);
- (6) Objectives are more likely accomplished when demonstrations, supervised trials, and feedback are emphasized (Joyce & Showers, 1983 and 1988; Eaker & Huffman, 1980; Snyder & Anderson, 1986);

(7) Programs where teachers share and provide each other assistance meet objectives more than those where teachers do separate work (Joyce & Showers, 1983,1988; Harris, 1985; Herriott, 1980; Eaker & Huffman, 1980; Snyder & Anderson, 1986; Zahorik, 1987);

(8) Benefit to teachers is more likely when the development is linked to general school plans/goals rather than single unrelated workshops (Neale et al, 1981; Hord et al, 1987; Loucks-Horsley & Hergert, 1985; Deal & Nutt, 1979; Joyce & Showers, 1988);

(9) Teachers benefit more when they can set their own goals and activities rather than when all is pre-set or fixed (Knowles, 1975; Brookfield, 1986; Moore, 1988; Eaker & Huffman, 1980).

Several significant, substantive works followed Lawrence's, adding a number of indicators or characteristics that provide evidence that change occurred as a result of staff development: Berman & McLaughlin in 1975 and 1978; Yarger, Howey, & Joyce in 1980; and Kells in 1980. Although each study supported several of Lawrence's findings, adding additional characteristics, most of which were presented in different formats. There were remarkable similarities, yet discreetly different phraseology -- teacher and administrative collaboration toward common school goals;

administrative support and participation; on-going in nature, teacher planned/selected; support for time to share, test, modify; peer interaction and support; local locus of direction; and one characteristic that was slightly new in expression, teachers developing a sense of efficacy.

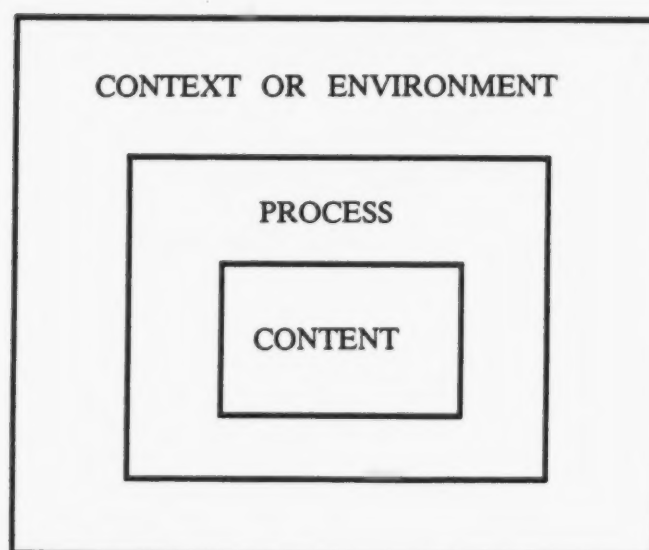
The three reports mentioned above form a substantial base for effective characteristics of staff development, a base that corresponds to the terminology of other recent educational research -- from effective teaching research, effective schools research, cognitive development, and change theory. The commonality of language may be one of the greatest benefits from the three efforts. Each report, along with others of merit, will be cited with individual indicators as the intervention is addressed in more detail in the following pages. The historical value of these studies is on a level with the effective schools and teaching effects research because of a surge of pressure on educators to professionalize their work. Staff development is regarded as an important tool for that movement to professionalism (Harris, 1985; Joyce & Showers, 1983 and 1988; Drake & Roe, 1986).

In her synthesis of staff development research, Sparks (1983) presents a graphic and verbal representation, saying that (1) goals and content are

Figure 2. 1

Illustration of Spark's Visual Representation

Staff Development: A Nested Process (Sparks, 1983)



nested in the (2) training process, which in turn is nested in (3) the context, the environment in which it occurs. This image gives some organization to a complex activity, and will be followed with some variance here to serve as an organized look at the related literature in the discussion that follows. Acknowledging the complexity of staff development, one must also acknowledge that all elements of it will not "fit neatly" into the categories of content, process, and context. There will be some overlap.

All staff development activities have process, content, context as the key ingredients, but the participants and deliverers also play key roles in the events. Design, purpose, intentions, and outcomes (Harris, 1985) are other important features to be considered in the discussion, but may not fit the organizational structure of the review in as orderly a fashion.

PROCESS

An assumption found in much of the literature is that staff development should be a continuous, systematic effort planned with long-range improvement goals (Eaker & Huffman, 1980; Wood et al, 1981; Fullan, 1982; Joyce & Showers, 1988; DuFour & Eaker, 1988; Peter, 1988; Hoover et al, 1989). The evidence from these sources that "one-shot" attempts to provide lasting, or meaningful, development for improved teaching is overwhelmingly negative. A recent survey of rural users (teachers and principals) of staff development in the Southwest concluded, however, that the episodic type is the most frequent, and sometimes the only, type of staff development provided (Hoover et al, 1989). Lasting effect (actual implementation of the desired outcome) in staff development comes from sustained effort that reflects the basic idea that change is a continuous process not a single event -- in teaching like anything else (Hord et al, 1987). The process of change is vitally important and deserves careful consideration in its design in order to produce the desired outcomes.

Three components -- design for training, implementation strategies, and evaluation of the activities for change -- are necessary before staff

development is undertaken by successful inservice providers (Harris, 1985). These components form the foundation of the intervention studied here. The training design patterned after the Eaker-Huffman (1980) model contains elements shown to be important to implementation: (1) teacher feedback supported by (2) an actual record of implementation attempts in the form of a log; (3) time during the training allocated for planning the use of the new strategy in the classroom; (4) recommended methods for practice, mentoring, and collegial interaction beyond the training session; and (5) an evaluation for each of the multiple (six in most cases) sessions. Each element of the intervention is considered for verification in the literature, acknowledging that many of the elements are frequently studied and reported from various perspectives and in differing combinations or clusters; therefore, several elements are referred to in different parts of this survey in an effort to be thorough and to illustrate their interrelatedness.

The Intervention Model

Research in urban schools shows that continuous, systematic approaches to staff development are effective (Joyce & Showers, 1988; Eaker & Huffman, 1980). The Eaker-Huffman model of implementing

research effectively into the classroom has been successfully used in urban schools. Modified for small, rural teacher audiences, this model serves as the basic design for the systematic inservice sessions of the intervention examined here (Eaker & Huffman, 1980). Referred to as the Consumer-Validation Process (CVP), it is based on the premise that as the ultimate consumers of the research, teachers are those best suited to "testing" the research findings in terms of applicability.

The goals of CVP are: a) to make teachers familiar with current research about teacher behaviors; b) to improve individual teaching skills by applying research findings; c) to have teachers become more analytical about their own teaching behavior; and, d) to have teachers critically evaluate research findings in terms of applicability to the classroom are incorporated into the intervention design. Beginning with production of findings on teaching, the process is transmitted to the teachers by communication of selected research content in a meaningful way, incorporating the characteristics of adult learning, to be addressed later. The next step is to generate techniques for applying the research in the classroom for trial use, planning and practicing these strategies with peers during the training. As the techniques are tried in the classroom, a data collection process provides for feedback with the linking agent for possible

technical assistance and clarification. After reflection, analysis and/or evaluation or possible modification of the effect of the technique by the teacher, validation, or, full and effective classroom implementation, is generally possible (Eaker and Huffman, 1980).

The selection and research base of the content for the intervention is addressed later in this review of the literature. Sound research-based content is as important as a sound process design if effective change/improvement is to occur as a result of the training or staff development.

Orientation, the first step after design and content decisions, is important (and frequently crucial) to an intervention's effectiveness, whether it is a staff development program or a new salary schedule. Those responsible for planning and initiating the program (frequently the principal or his/her designate, a committee or team) must attend to preparing the participants. Understanding the rationale or need for the development topic, both requirements and desired outcomes, its goals and the match of those goals with those of the school -- requirements and outcomes of the training from the beginning will increase chances for success (Joyce & Showers, 1988). With an awareness of the intent, direction, and purpose of the program, recipients are more open to

accepting the rationale of it. When presented with background information and preparation for the practices, strategies, etc., teachers have initial knowledge of the total design. Given details about cost in time (and possibly materials or other relevant items), the expected effort and action, along with the expected rewards, benefits and support, their acceptance of the effort is more likely (Krupp, 1981; Gall, 1985; Joyce & Showers, 1983 & 1988).

Another integral part of orientation can be an awareness of the change process itself, the stages likely to occur and how to deal successfully with concerns related to the change (Hord, 1987). A number of excellent models of training and intervention research address monitoring and managing change, from orientation to a new program/practice through to its ultimate stage of institutionalization (Hall & Hord, 1984). Time and care to provide proper orientation for systematic staff development prepares a stronger foundation for expected successful implementation of the desired strategies. Proper orientation promotes ownership among the staff, one of the most important elements for assuring lasting and relevant implementation (Drake & Roe, 1986). The first step in many schools is the selection of a task force of teachers who will assist in the planning and orientation stages. This procedure

should be an effective action in a rural setting where full time staff development personnel seldom exist.

The training element is the next component of the intervention model. While all elements of the systematic model are important, the actual training session is the catalyst. The production of results that occurs in a chemical response through addition of a catalyst to the right elements is similar to what happens to staff development when training as designed is delivered in a positive setting. When the training incorporates the designed features together, the catalysis occurs. Content that is research-based or best-practice craft-based is transmitted during the training. The catalysis occurs when the training session combines the elements of modeling, demonstration, planning with practice, and feedback or sharing of experiences. The desired combination facilitates the reaction or response to the new strategy. When provided consistently and systematically, the new strategies or behaviors are implemented (Eaker & Huffman, 1980). A great deal of research supports the elements included in the training session design that was recommended for each intervention session (Harris, 1985; Joyce & Showers, 1983 and 1988; Gall & Renschler, 1985). The increase of actual transfer of the learning when the maximum combination of theory, demonstration, practice with feedback,

and coaching or mentoring occur in a training program tends to be at least 75 percent higher than when the only theory and demonstration occur (Joyce, 1983).

The training delivery for adults must also take into consideration the characteristics of adult learning, a difficult aspect if it actually does consider meeting individual needs. At least six theories of adult development are prominent, and while there is divergence among those theories, there are also commonalities that can provide guidelines for dealing with the adult learner (Levine, 1988). The correlational aspect of the most common characteristics of adult learning make any "best" list impossible. Among the suggestions to accommodate the learning for adults are such ideas as: 1) learners share in the planning of the training; 2) a part of the training includes self-instruction; 3) learners are active, participating as the objectives are accomplished; 4) individual needs/interests are considered and accommodated; 5) demonstration as well as guided application occur; and 6) opportunity for collaboration and/or interaction is provided and/or encouraged (Lawson & Torres, 1988).

The collaboration and peer interaction element of the training is one of the most important features. Seldom do rural teachers have the

opportunities for informal collaboration related to instruction to occur like the teachers in large schools (Zahorik, 1987; Hoover, 1989). Frequently not only is there generally "one of a kind" teacher (ie. one third grade teacher, one physics teacher), in most rural schools, there may be only one primary teacher and only one science teacher - who may even teach two or more disciplines. The value of collaborative aspects of staff development seems to be an emerging area for the attention of researchers -- collaborative consultation, evaluation, and development. While the value is found, the methods of providing for it to occur are yet to be well defined.

Joyce and Showers (1988) emphasize the benefits of a collaborative approach for teacher training. Measures or levels of application of the learning are referred to as transfer in the current literature. Differentiating transfer of learning into horizontal and vertical dimensions and levels, they draw important parallels between effective staff development and effective athletic training programs concluding that teachers need to organize into groups (teams) for purposes of attaining and practicing skills which have been broken into discreet steps for mastery. Emphasizing the collegial aspects of learning to learn and learning by watching another's attempts at a skill, the cognitive activities

of the effort of peer collaboration are credited with increasing the potential for routine use or "executive control" over a new skill or strategy.

A study of teachers in a variety of city schools revealed through its interview format that collegial relationships and experiences between teachers also have profound intrinsic rewards. Helping teachers share more about their classroom behaviors (in this case related to inservice strategies) with their colleagues may be one of the most effective ways to improve instruction and, at the same time, reward teachers (Zahorik, 1987). When collegial interaction is planned as part of staff development, it follows that it might prove to be an excellent way to improve teacher skills and at the same time provide job satisfaction, encouraging retention, another significant rural school concern (Arends, 1987). The opportunity for collegial interaction and the resulting benefits are expected outcomes of the consumer-validation process used in the intervention since it has been credited with a significant increase in the collaboration and successful implementation of new strategies at all levels (Eaker & Huffman, 1980). Collaboration, an intrinsic reward for urban teachers, should occur as teams of rural teachers work together on similar strategies, building staff confidence with the new strategies and building

an infrastructure for continued, collegial learning.

CONTENT

An important element of any effective staff development plan is the content, which should have a sound basis in research (whether empirical or craft-based). Several studies have provided evidence that teachers value the opportunity to stay abreast of current research (Eaker & Huffman, 1980; Knight et al, 1988). An important learning of the literature review of staff development by Joyce and Showers (1988) regarding content was that the focus of the content needed to be narrow to be successful. Failure in staff development was likely to occur when too much was undertaken, training diluted, or content not adequately covered.

Even though the process of staff development has received most of the attention of researchers (Wood, 1987), content is the basis of the change or improvement and certainly worthy of considerable planning. A great deal of research has focused on characteristics of teachers, and briefly summarized by Bloom (1981) leads to the conclusion that those teacher characteristics "have little to do with the learning of their students." Generally those variables (ie. age, degrees, ethnicity, gender) are not

alterable by staff development; on the other hand, teaching behaviors are. It follows that sound research on effective teaching and craft-based practice (characteristics of good teaching behaviors) are the most appropriate contents for teacher improvement and development, for effective growth by supplying new strategies and knowledge, for maintenance of standard skills, for changing ineffective practices -- whatever the ultimate purpose may be.

The substance of staff development is often determined by the intended audience, the school district as a whole, a site-based approach for a school, or for an individual teacher (or possibly a select group of teachers with a common focus). Joyce and Showers (1988) refer to three spheres of staff development -- individual, collective, and systemic. The latter, systemic, is coming to the forefront in improvement movements with the underlying assumption that system needs of a school, as a synergistic entity, require staff development that serves the needs of the entire mechanism (Snyder & Anderson, 1986). The choice of content for a systemic approach to staff development is not simple. Choices such as learning styles, teaching strategies or models, school climate conditions, or technology are topics that overarch all curricular offerings and all grade levels. Content decisions for staff development intended to improve

a system generally minimize differences between disciplines and levels.

Selection of content that has application to all professionals in the audience increases the chance of providing for systemic needs of a district and at the same time maximizes potential impact on students throughout the system since the entire staff are involved. Attempting to meet systemic needs has certain difficulties in matching the system's needs to those of the individual adult learners; the effort requires careful consideration to design and flexibility. Considering the previously mentioned difficulty, content with broad application (transferability) has an added "plus" since it should maximize the fit. Ownership from the teachers involved in any development activity or process is not difficult to evoke if the selected content is relevant to their current assignments. Further, if teachers can have a voice in the planning, implementation, and evaluation of the development program it tends to be more effective (Bailey & Crist, 1986; Cooperman, 1985).

In spite of the fact that effectiveness of implementation is increased by relevant content, seen as needed by staff, teacher selection or planning of that very development is not occurring as one might conclude. A survey of rural schools in Missouri by Vaillancourt (1986) indicated that less than 3% of the teachers had any input as to content of staff

development (Peter, 1988). A congruent idea is extrapolated from the SEDL survey of 1988 that found most teachers interviewed felt that most staff development revolved around mandated topics (Hoover et al, 1989). When the content for staff development has relevance, is seen as valued and needed by staff, and is supported by administration, implementation should be optimal. The selection of content for training, therefore, is a significantly important part of an intervention.

The critical content selected for the staff development intervention to be studied is the improved teaching of thinking processes and skills, a topic of a great deal of recent research and inquiry (Costa, 1985; Marzano, 1987; Presseisen, 1985). Significant research on cognitive development has provided an abundant selection of programs for classroom use. Thinking has traditionally been reserved for only top-level students. Benjamin Bloom (1956) provided a taxonomy of educational objectives that is still used frequently today -- many times inappropriately by his own description in his recent work (1981) that gives a different perspective than is common across America. He clearly shows that higher level thinking is for all learners. The idea that effective thinking is for all learners certainly supports the notion that teachers need the capability to provide a variety of ways to facilitate learning to think (Presseisen, 1985),

evidence that strategies for improved teaching of thinking are ideal content for staff development of all teachers.

The dilemma of how to go about planning for the improved teaching of thinking has been made much easier by the recent increase in research on cognitive development. Benjamin Bloom is joined now with many experts studying and writing about higher level thinking. The search for content appropriate to the needs of the project undertaken here revealed a definitive and comprehensive work on the current resources in this field (Costa, 1985). Providing a reference complete with rationale on the importance of teaching thinking, descriptions of many current programs (and their research), it contains an initial literature review on thinking, with preparation strategies, checklists, and outlines for short to long term approaches. Another comprehensive guide for selection of programs for improving the teaching of thinking provides concise descriptions of validated programs offering a variety of formats. The broad range of available approaches designed to provide expertise in improving the teaching "of, for, and about thinking" (Costa, 1985) along with publications about them in the most popular educators' periodicals make it clear that attention to cognitive and metacognitive functions has become a regional and national priority.

Interactive communications and discussions with regional state education departments and appropriate organizations, associations, and experts in the field led to close examination of a program developed by another regional laboratory (Arredondo & Marzano, 1986). The broad research-base of its development, the use of practical educational language rather than psychological/medical jargon, and its significant piloting effort and national acceptance were major factors in selecting it for use in the intervention. The content for the rural intervention was selected from validated programs based on 1) cost, 2) adaptability into any curriculum already in place, 3) easy use across disciplines and grade levels, and 4) design flexibility for diverse use.

Several guides or checklists in the literature suggest essential elements for developing a program for staff development to improve the teaching of thinking. One specifically addressing the teaching of thinking lists four criteria for attention:

- 1) attitude building that supports the effort;
- 2) understanding of what characteristics a school that fosters thinking has;
- 3) the identification of specific thinking skills, strategies, methods; and
- 4) the actual development of a plan (Seif, 1987).

The content and the process selected for the intervention were measured

against these criteria.

The first criteria, **attitude building that supports the effort**, is built into the content selected for the intervention. The introductory (orientation) presentation of "Tactics," the content, presents a research-based rationale for teaching thinking, as does each element of the program. Every strategy included is based on research, explained with practical applications and information about why the strategy should be taught, for what purposes, and when, how, and frequently, how often for student routinized use.

With a thorough approach to the overt teaching of the strategies, the second criteria (**understanding what schools that foster thinking are like**) is accomplished through the activities of the first. In other words, as the thinking skills/processes are taught, through the use of supportive material, the direct approach fosters the characteristics desired by a school that values thinking as a learning outcome. The third criteria, **identification of specific thinking skills, strategies, methods**, is provided by the enumeration of twenty-two skills drawn from research and monitored piloting. The fourth criteria (**developing the program**) is covered by the process designed for the intervention. The Eaker-Huffman model that encourages higher level cognitive functioning of the teacher

participants stimulates metacognitive behaviors through steps of planning, practice, logging, and seeking feedback through sharing with peers.

Supportive, supplemental enrichment for the content selected is found in an academic production establishing common terminology for the field (Marzano et al, 1988). This publication resulted from a collaborative effort of many educators from frequently conflicting groups. Theorists, practitioners, administrators, and teacher unions in a concerted effort produced it, providing a definitional work that gives unity through a common language, definitions, and understandings for many of the ideas necessary to address and improve the teaching thinking.

CONTEXT

With process designed, content selected, next to be considered is context -- the area of the intervention where the least external control is possible, and the area in greatest need of clarification and definition through careful study. When compared to data and knowledge about training components, there are almost no data on the impact of variables of context for staff development (Joyce, 1988). Wood's caveat to researchers emphasizes the importance of context to rural school research, "We can increase the usability of our research if we carefully document

the origins of our research findings" (Wood, 1987). Both the context of the school and the context of the training seem to have important influences on the effects of the development process, influences that appear significant, correlational, and complicated.

Context -- environment -- climate -- whichever term, a great deal of literature espouses its close correlation to success of most of what goes on in business, school, and any sociological event or interaction. It is an important consideration for studying effective staff development. Like some of the unalterable characteristics of teachers, there are some features of the context that are not subject to manipulation, management, or change, but an understanding of the context variables can maximize effect of development strategies.

Drawn from the literature the ten common variables of context mentioned in a variety of terms or descriptors are:

1. supportive policies by decision makers
2. collaboration from top and bottom
3. clear mission or goals
4. fiscal support
5. time management or support
6. selection or choice from information
7. trained leadership
8. adult learning considered
9. definition of intended outcomes
10. collegial atmosphere promoted

While these variables are not the only contextual factors to be found in the research, they overlap or include most the elements addressed in the literature. The correlative relationships that exist even in their definition is difficult to address. A large number of them can be included in the realm of administrative support; clearly one-half of the list are within the functional control of administration.

Administrative support

Since staff development is considered the heart of improvement, and since it is one of the major tasks of educational supervision, administrative support of any program is important to its effectiveness (Harris, 1985). In rural settings, school administration generally has enormous influence over the environment as fiscal, personnel, and instructional decisions are made by the same individual or very small group. The small size of the rural administration causes its relative impact to be accentuated (Newton, 1987). This impact/influence can be positive, negative, or of course, neutral. When negative, it can destroy a program quickly (Nachtigal, 1982). Providing the right positive environment is one of six elements that Drake and Roe propose for success to occur in the area of improved learning through staff development. From a strong human relations perspective of the principal's role in staff development, they suggest five

other leadership activities: selecting professional people; stimulating rewarding inservice and projects; encouraging creative problem-solving by teachers; creating relevant collaborative staff opportunities; and supporting collaborative improvement actions of the staff (Drake & Roe, 1986). This list certainly indicates the importance of administrative activity in successful staff development.

Some rural research supports this idea. With only an "n" of one, a case study of an effective rural principal deduces that there is a

"unique position of the principal in the school organization that permits him or her to facilitate and support the exchange of ideas for the improvement of instruction.... In line with expectations for inservice programs found in successful schools, programs at Jefferson had been initiated by both the principal and individual teachers." (Dwyer et al, 1985)

Administrative participation in the actual delivery of the staff development is just as important as the planning, initiating, or supporting it. An instructional leader's support and participation in staff development is persistent in the effective schools research literature also (Edmonds, 1979; Goodlad, 1984; Lezotte, 1982; Purkey & Smith, 1982). Involvement of the principals and the superintendent in the training increases chance for implementation and maintenance, serving to extend instructional leadership growth along with teachers (Murphey & Hallinger,

1986). It is suggested by some research that the principal is the ideal conduit of the research dissemination, perhaps a zenith of administrative support (Knight et al, 1988). The difficulty of administrative participation is magnified by the scope of work that most principals face in rural settings because of their extended duties in absence of support staff.

A major area of administrative support (whether or not actual participation is possible) is in the framing and communicating of school mission and goals. When the mission is clear, the goals of the school are articulated in terms of the staff development projects or efforts, there is an increased chance of full implementation (DuFour & Eaker, 1988). When the mission of the school is clear and the match of the goal for the staff development is communicated, additional administrative support is evident in the management of resources, including time, to minimize conflicting demands on teachers. Staff development during release time, appropriately scheduled to maximize teacher participation without interference with their other obligations considers the day, time of day, and the spacing of sessions over the extended time frame of the entire program. Those times must be considered within the context of the system calendar (Gall & Renschler, 1985). The protection of teacher time is more important in rural districts where survey data reveal that

more hours are spent (on average) on teaching duties by rural teachers than those in large districts (NEA, 1987).

Selection of participants

Administrative support and participation can establish a better context for successful innovation; however, the selection of a positive group of participants also has import to successful innovation. Volunteerism among teachers is one of the most effective measures for continuity and improvement of an innovation (Joyce & Showers, 1988). When volunteer teachers become trainers for staff development purposes, it provides professional growth opportunities for them as well as providing peer collaboration and supervision. The choices to participate in a staff development innovation that teachers make from information about its relevance and application to their assignment have been mentioned already, but bear repetition under context. A wealth of literature supports that staff development of a collaborative nature can be effective, continued, and comprehensive. When self-assessed needs of professionals form the basis of a peer directed and led systemic effort there is great potential for success (Gall and Renschler, 1985). Some basic factors to consider in analyzing needs of a staff for inclusion (or how to include them as an integral part of the systemic effort) are ages of faculty, gender,

educational status, experiential background, and communication styles (Krupp, 1985). Most of the effective schools research places the value of enriching professional experiences through staff development over years of experience or number of degrees, another support to having all staff participate. Sharing of expertise and transmitting of knowledge from the older faculty members as a component of staff development have double benefits - enrichment to the less experienced and intrinsic reward to the experienced (Ducharme & Fleming, 1985). Meeting individual needs within systemic efforts can be less difficult if the individuals are committed to the project and take the major responsibility for planning for their own individualized needs within the scope of the program.

Mandating all teachers, at all levels for development in a joint effort that has relevance and application to all disciplines and with all learners is a controversial method of selection for staff development. Mandated training for all teachers frequently has some problems, although it may be difficult to reach the teachers who need development most with a policy of volunteerism. While many studies support volunteerism, there are others that strongly recommend mandated inclusion of complete staffs for maximum effectiveness in facilitating improvement efforts (Gall & Renchler, 1985). Other variables contribute to minimizing some of the

negative aspects of mandated training, ie. relevance of learning to assignment, presence of an administrative advocate, incentives, release time, etc.

All teachers and professional staff of a system are rarely included in staff development that addresses the system's needs. As a result, selection of those engaged in non-academic (physical education, vocational education and other "special programs") to participate is often conducive to fragmented approach to a total improvement effort. Frequently in rural schools, participation in non-academic programs is more frequent than in academic course work, at least the measure of time spent on the non-academic endeavor is inordinate by comparison. While this effect sometimes necessitates excessive absences from basic academic courses, it may serve to accelerate the influence of the teacher or sponsor of the non-academic program (Muse, 1984). With that as a consideration, it may be that teachers of non-academic courses have an increased importance to the development of improvement strategies for improved student outcomes.

Incentives

Incentives and challenging orientation are ways to "captivate" teachers into ownership. When plans include substantive teacher input and the

inservice is carefully evaluated by criteria that maximize teacher interest, participation, and involvement, the method of selection is less relevant (Harris, 1985). The combination of strategies common among master teachers with an understanding of the needs of the marginal teacher present a challenge to the development of the first presentation (Berliner according to Brandt, 1986; Loucks-Horsley, 1987; and Krupp, 1985). Inherent in successful implementation is the clear understanding of the expected outcomes of the training by participants (Gall & Renschler, 1985; Wood & Kleine, 1987).

Several incentives serve as motivations for the teachers to select and support development projects, increasing implementation effectiveness (Berman & McLaughlin, 1978). Vroom's model of motivation, expectancy theory explains that high performance is likely to occur when individuals perceive that the behavior will lead to a desired outcome, that the probability that their efforts will lead to higher performance, and that the outcomes hold personal attraction (Hoy & Miskel, 1987). Two of ten reinforcing themes to support innovation are teacher involvement and incentives; another is longitudinal development of the elements of planned change, (Fullan, 1896). Incentives for staff development have many forms including incremental pay additives, boosts to career ladders,

recognition, college credit toward advanced degrees or additional credentials, opportunity for desired activities outside the classroom, and, of course, intrinsic incentives of personal growth desires. Presence of incentives influences both participation and implementation probably in varying degrees according to many other variables, ie. type of selection, degree of professional commitment, level of competence/career planning. There is a prevalent philosophy discouraging the use of incentives as motivators for professional development, purporting that staff development should be an integral part of the job of educators, a responsibility embedded into the workplace for the formal study and improvement of those involved (Joyce & Showers, 1988). With such a philosophy in mind, logic might lead to recommendations that support incentives for school districts rather than for individuals in the realm of staff development (Forbes, 1985).

Trainers

While the research relevant to the effect of trainers on staff development is relatively limited, there is sufficient evidence to support some general statements. Several surveys support the idea that teachers learn most from other teachers, and in some cases prefer the training delivered by other teachers or local personnel (Gall & Renschler, 1985;

Hoover et al, 1989). For years suggestions have been for rural schools to supply their own trainers, especially for special program purposes (Evans, 1980). Such an approach where insiders (teachers and/or administrators in the district) are trained by outsiders in a "turn-key" effort return to deliver the training in their respective districts has significant potential to resource-bound rural schools that will, very likely, never have staff development staff (Milstein & Kreis, 1987).

Credibility is an enormous factor for the trainer, but one difficult to assign to the level of the presenter.

"Researchers are often lacking in recent K-12 teaching experience, and this causes a lack of credibility with classroom teachers. A person who is knowledgeable of research, yet has close association with classroom teachers, can bridge this credibility gap" (Eaker & Huffman, 1983).

The capacity of a trainer to render technical assistance may have a significant relation to the implementation process, especially as new teaching behaviors/strategies are practiced. Monitoring for coaching and assistance purposes is shown to be supportive to implementation (Joyce & Showers, 1988); therefore, the closer, more accessible, the trainer is to the trainee, the more effective the training would be assumed to be. The technical assistance may not need to come from the actual trainer, however. The collegial interaction that occurs during the designed

training studied here is expected to provide a certain degree of peer assistance that may supplant need for extra or outside continued assistance.

Reviewing the several bodies of relevant research pertinent to this study, it can be concluded that many factors contribute to change or improvement in rural schools through systematic staff development interventions. Like the extremely diverse cultural settings of urban, inner-city schools, rural schools and their programs require careful analysis of the many variables that may be significantly different from the traditional approaches that have been followed. Tailoring programs and approaches to match the most positive predicted contexts for successful intervention may result from this close examination, providing general formulas for the several categories of diverse types of rural schools.

CHAPTER THREE

METHODOLOGY

Webster's II dictionary describes empirical knowledge as "capable of proof or verification by means of experiment or observation . . . relying solely on practical experience and without regard for theory or system" (Soukhanov, 1984). When considering empirical research as that relied upon or gained from experimentation or observation, one must be cautious in describing which of the two modifiers apply best to the methodology or, in fact, if both do. An assumption of this study is that rural schools operate in a nonrational world where organizations follow complex logic that may appear contradictory at times rather than orderly reasoning easily controlled (Patterson et al, 1986). Models for improved efficacy in schools can be analyzed, defined, and managed to be more adaptable to the constant change demanded by current situations, non-rational or otherwise. Those models can be more conducive to productive improvement of the teaching/learning processes. With innovations or interventions in nonrational situations or environments such as schools, control of an experiment by the investigator is difficult, but awareness of the nonrational nature may promote better understanding. The levels of

authenticity, as well as the levels of logical inference in observations are frequently subject to biases that are beyond the scope of this study. The intention here is to provide a base from which other studies can depart with methodologies that minimize the initial difficulties of value-laden data. In examining contextual variables in a non-controlled environment, constancy must be maintained within the description, protocol of observation, and rating variation of each variable examined. Where statistical operations are analyzed, empirical case study techniques can provide possible explanation and/or comparisons (Yin, 1984). Chapter Three presents the methodology of this study focusing upon instrumentation, protocol, definition of descriptors (predictors), coding, procedures of data collection, and processing.

DATA COLLECTION AND INSTRUMENTATION

Four basic types of data were collected and used in this study: archival, perceptual, behavioral, and observational. Each element is described here in its simplest form, then within the context of its use in the study.

Selection of Sites and Related Data

Site selection fit basically into three categories and was dummy coded

(categorical, value free coding) as a:

- 1) request by current site administration (self-selection);
- 2) nomination by the state department of education, and/or;
- 3) nomination by an intermediate agency, institution, or person.

Nominated sites were considered according to several criteria: a) administrative cooperation and support specified in the letter to participate; b) commitment to the improved teaching of thinking through school goals and the proposed staff development effort; c) logistical match to the representativeness of the region according to size (ADA), ethnicity, socio-economic status (SES), and geographic location. While there were no controls to assure that the first two criteria were actually present other than verification by the school administration, the other data were authenticated by published school statistical data. As the intervention progressed, administrative support and commitment as well as goal match were measured by observational methods (site visits) as well as instrumentation (training evaluations).

Letters to participate (Appendix A) were sent to seventy-four schools in the five states noted earlier proportionate to proposed selection numbers per state. Written acceptance was received from each school according to the previously agreed upon numbers within each geographic

area, qualified further by distribution of average daily attendance (ADA), representative ethnicity and socio-economic status (SES). During the project, schools supplied archival data, which were verified by published statistical data (ie. state documents and annual reports from public record), and direct contact through telephone or on-site interviews.

SITE DATA

The data sets relating to the sites are relatively straight forward, simple elements, described below. The site data sets used in the analysis and their codes were:

- a. each site was coded with three digits representing state and site to provide anonymity, 101, 102, etc.;
- b. student population - the number of average daily attendance as reported for funding purposes in each state (referred to as ADA);
- c. the number of the total school faculty;
- d. the number of administrators in the district;
- e. ethnicity - the percentage of the white, Black, Asian, American Indian, or other shown as a code:
 - 1 = high, over 52% minority
 - 2 = medium, 25 to 51%
 - 3 = low, less than 25%
 - 9 = unknown or conflicting data;

- f. socio-economic status (SES), a quantitative figure, student population eligible for free or reduced lunch;
- g. distance from an institution of higher education providing professional growth opportunities for educators, coded by category as:
 - 1 = less than 50 miles
 - 2 = 51 to 100 miles
 - 3 = 101 to 150 miles
 - 4 = over 150 miles;
- h. mini survey of school effectiveness, survey of all participants in the training at each site. The mean average at the site was used for all teachers at that site in computing the implementation formula as a measure of their perception of instructional focus. Possible range of 0 (absent) to 5 (strong).

Figure 3.1

NUMBER OF DEMONSTRATION SITES PER STATE

STATE	NUMBER OF SCHOOL SITES
Arkansas	6
Louisiana	2
Oklahoma	8
New Mexico	4
Texas	10

TRAINING, TEACHERS, AND IMPLEMENTATION

Staff development providers were trained in the content and delivery process of the intervention to serve each site. Trainers were chosen from a select group of diverse, competent educators from across the five states, many already providing staff development to schools in the region. The configuration of the group is shown in Appendix C. The single relevant data factor regarding the trainers used in this study was their employment affiliation. For analysis purposes this data set was coded categorically as:

- 1 = state department of education
- 2 = intermediate education agency
- 3 = institution of higher education
- 4 = local school site staff
- 5 = another local school staff
- 6 = other (ie. independent consultant)

This group of trainers, labeled the CADRE (Cooperative Arrangements for the Development of Rural Educators), delivered the training according to the prescribed process model and content in a scheduled series of sessions of the same duration and format. (Appendix D shows the calendar of training sessions held by site, giving an overview of the intervention at each site.)

Documentation of the site training followed a routine of session evaluation and monthly recording provided by the trainer at the

completion of each month's training. One question from these evaluations was used in this study because it served as a specific teacher self-measure of readiness for implementation. Taken from the final session evaluation (Appendix E), question 7 asked teachers to rate their preparation to use the strategies trained, rating from 1 (not prepared at all) to 5 (very prepared). The mean average at each site was used as a valence in the formula of teacher implementation. The monthly record form (Appendix F) submitted by trainers, helpful in managing the entire project, was used in the final analysis of case elements when explaining the outliers with data that was relevant in specific cases. Data resulting from observations of training and site visits were used to examine divergence from the predicted rate of implementation as explained in Chapter 4. A protocol for site observation (Appendix G) was used to record information from selected sites that were visited for interviewing, monitoring, and documenting impact or effect of the staff development intervention. Analysis of the observations furnished data for case study information, as did less formal documentation such as notes following telephone communication with trainers and/or site personnel. These communications resulted from the process of monitoring, documenting, and rendering technical assistance.

TEACHER IMPLEMENTATION FORMULA

Most data used in this analysis were gathered directly from sites, at training sessions, from monthly reports by site trainers, from lesson plans and activity logs submitted by teachers, and from training session evaluations. Several of these sources of data from sites, trainers, and teachers were used in the teacher formula, shown as Y in the research formula.

The teacher formula, a configuration of behavioral change, was difficult to determine. To avoid analyzing simply the results of good documentation, rather than changed behavior, several elements of data were tested for the best combination to determine the most accurate reflection of behavioral change (use of the strategies taught) not simply a reflection of documentation. The resulting formula, $Y = (P + L + T)^k$ may be written as:

Teacher rate of implementation equals the sum of the value of plans submitted plus the total of logged activities, plus the total training sessions attended, multiplied by the mean average of the final evaluation quotient at the site that measured teachers' preparedness to use the strategies taught.

Discussion of each element is important to the understanding of the value of the formula. Determination of the quality of lesson plans produced and used by teacher participants served as one part of the rate

of teacher implementation (represented as P in the formula). In the delivery model, planning for use of the strategy was an important part of the training. While some variation of this element of the training session occurred because of time constraints or variations beyond the control of the investigator, the evidence of plans was a concrete representation of implementation.

The procedure of evaluating the teachers' lesson plans was conducted by one external trainer, providing internal validity by eliminating discrepancy that might occur with interrater reliability. The trainer examined all submitted lesson plans with one criteria in mind, "Was there sufficient evidence to support that the teacher did in fact teach the strategy intended with understanding of that strategy?" The lesson plan (Appendix H), designed along the lines of Madeline Hunter's model (Hunter, 1984), provided the necessary evidence of planning with seven parts, sufficient to provide a framework of evaluation of teacher understanding.

The trainer/evaluator was a training and technical assistant, qualified to deliver the teacher training in the Tactics for Thinking that formed the content basis for intended teacher improvement. Each lesson plan was carefully reviewed to determine if the overt teaching of the thinking

strategy described as its objective could be accomplished with the elements shown. The overt teaching of the "tactic" was the content of the staff development; therefore, the lesson plan illustrating use of the training was evidence of implementation.

One of the three possible ratings was assigned to each lesson plan submitted. Represented as P in the formula of teacher implementation, the lesson plans were rated accordingly:

- a. 3 points awarded when Lesson Plan exhibited teacher understanding and application of strategy. Complete process of the "tactic" taught was clearly evident;
- b. 2 points awarded when Lesson Plan demonstrated some understanding of process, but the entire process was not evident, or not totally obvious; and
- c. 1 point awarded for attempting Lesson Plan, but not sufficient evidence of understanding or application was present. Teaching of the "tactic" was possible, but not clearly evident; therefore, not counted as full implementation.

A limited amount of behavioral data providing an important part of the teacher measure of implementation were taken from an activity log kept by participating teachers to record attempts of use of the newly trained strategies. Represented as L in the formula, the log is shown in

Appendix I. The teacher was to enter each strategy tried, results, and his/her related feelings. While these records were generally discounted as being incomplete records of all attempts tried, they represented a minimal reflection of initial implementation actions of significant value when combined with the other data in the formula.

The teacher activity logs were designed for several purposes, primarily to use as a guide for teachers during sharing information about their efforts toward implementation. Time was set aside at each training session for interaction about the use of the particular strategy/strategies taught in the previous sessions. The number of activities logged were counted and used as the sum, regardless of recorded feelings of success, failure, uncertainty -- a simple record of the number of recorded entries. Each try represented attempted implementation, regardless of the success ratio.

The final element of the teacher formula was an evaluation factor resulting from the question, "Overall, how prepared do you feel to use the techniques presented in the training sessions to improve your students' thinking skills?" Rated by the teachers from 1 (not prepared at all) to 5 (very prepared), the mean average of this evaluation question at each site was used as the modifier of each teacher formula from that site with

the rationale that self-evaluation of preparedness to implement was a valid measure of the effectiveness of the site training.

OTHER TEACHER DATA

Several quantitative elements of data were drawn from records of the training intervention itself, archival in nature, but directly resulting from data collection related to the intervention -- as these data were not available except from the teachers, administrators, or others as participants in the training. Besides the preparedness question taken from the final evaluation session, the number of participants at each site training, and number of training sessions each participant attended served as important data.

Five categorical teacher data elements were examined in the analysis in addition to the elements combined in the measure (rate of implementation). These teacher data sets were used in the analysis shown with coding as follows:

- a. teachers in the project were coded by site to allow for data verification, yet provide total anonymity.
for example 1 = a state,
101 = a site in that state, and
10101 = a teacher at that site.

- b. grade level taught by participant
 - 1 = kindergarten to grade 3
 - 2 = fourth to sixth grade
 - 3 = seventh and eighth
 - 4 = high school
 - 5 = all grades in the school
 - 6 = administration
 - 7 = other
 - 9 = unknown
- c. subject or course taught
 - 1 = academic (also self-contained elementary)
 - 2 = non-academic (P.E., music, etc.)
 - 3 = administration
 - 4 = other (librarian, nurse, etc.)
 - 9 = unknown
- d. gender of the teacher, coded as,
 - 0 = female
 - 1 = male
 - 9 = unknown
- e. type of selection for training
 - 1 = volunteer
 - 2 = selected
 - 3 = mandated
 - 9 = unknown

TRAINING

The six sets of data used for the training, are shown as coded below:

- a. time of day of the training, coded as,
 - 1 = during the school morning
 - 2 = during the school afternoon
 - 3 = shared time, school time/after school
 - 4 = immediately after school
 - 5 = evening or weekend
 - 9 = unknown
- b. release time provided
 - 1 = release time provided
 - 2 = no release time
- c. the number of participants in the training (quantitative)
- d. the presence of administrators participating coded as:
 - 1 = administrator participation
 - 0 = no administrator participation
 - 9 = unknown
- e. incentives provided
 - 0 = no incentive offered
 - 1 = incentive provided (college credit, professional advancement credit)
 - 9 = unknown

STATISTICAL METHODS

Beginning with thirty sites involved in the intervention, there was a possible N of 1,308 teachers who might attend the training for improved strategies of teaching thinking. Although the records of the first training

sessions indicated that at least 625 teachers attended, an attrition rate could not be accurately assessed since records were not complete from two sites, and there was no indication of the teachers who attended only for initial information about the project. Some teachers came to the awareness/orientation sessions for informational purposes.

An important issue with the researcher was to analyze actual implementation, not simply documentation. With a final N of 463 teachers who participated in the project, this number represents a large picture of rural schools considering that several sites have very few faculty members. All data sets were verified from two or more sources, providing reliability.

All data collected for the final analysis were assembled and coded using IBM Lotus software to combine, separate, and organize each set for utility in the regression analysis. After all mathematical functions were performed, these data were transferred to the IBM 3081 mainframe computer at the University of Texas at Austin to be analyzed through the use of the SAS computer data analysis package. The data was then treated and analyzed with the coded information.

Since each individual variable was not predicted to show significant variance with the desired teacher implementation rate, individual

ANOVA processes were not appropriate. First a univariate procedure was applied to each variable with histogram, boxplot, probability plot and all other standard data printed for analysis. A general linear models procedure was preferred over an ANOVA for its capability to analyze variables of differing cell size. An alpha level of .01 was set as the level of significance. Using GLM procedure with SAS the model's significance was tested according to a high F ratio with $p < .01$.

A regression equation to predict the criterion from predictor variables was established as follows:

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3$$

Y = teacher implementation

b_1, b_2, b_3 = partial regression coefficients

A stepwise multiple regression analysis was employed to predict the best combination of twenty-four variables as predictors of the dependent variable (teacher rate of implementation) called formula. An explanation of over 55% of contribution to the predictor model was established for selecting the best variables for the criterion prediction. Beta weights, rather than regression coefficients, were examined to show which predictor variables contributed the most to successful prediction. For categorical predictors, each vector was treated as a separate predictor in

order to achieve maximum accuracy in the prediction model. To reduce the effects of multicollinearity, a Pearson correlation was performed, again using each continuous variable, and in the case of categorical variables - each vector of the variable - to further reveal the degree of relationship between the predictors.

Plots were generated by site, by the best model, and by the squared residuals of the model to secure an accurate selection of outliers. Clear deviations of the implementation formula for both predicted and actual performance were identified and examined for possible investigation. Case analysis was employed for further explanation.

CHAPTER FOUR

RESULTS AND ANALYSES

The results of several processes outlined in the preceding chapter are analyzed and explained here. While Chapter Three presented detailed descriptions of the variables treated, both quantitative and qualitative, additional details will be addressed in this closer look at the data in an effort to fully understand and describe the contexts of the staff development intervention as it occurred in twenty-eight rural school districts. The multiple hypotheses presented for consideration in the study are dealt with individually, after the treatment of the variables in the best combination resulting from the stepwise multiple regression.

Close examination of actual teacher implementation that varied significantly from predicted implementation rate is handled in case study fashion. The analyses of outliers have possible implications for additional research and for the application of certain actions in planning for implementation of improvement strategies or programs. The implications and recommendations will be addressed in Chapter Five.

UNIVARIATE PROCEDURE

For descriptive purposes, an univariate procedure was performed on the single dependent variable, the teacher rate of implementation formula. The several components of the teacher implementation formula were treated by statistical procedures separately, also for descriptive purposes, before their use in combination for the dependent variable (formula). The lesson plans, activity logs, training sessions attended, and evaluation question that are combined to make the formula are explained in detail in Chapter Three.

The range of lesson plans was from 0 to 24 with an N of 463. The range of activity logs was from 0 to 18, also with an N of 463. With only six possible sessions of training, the range for T was from one to six with 81.9 percent of the participants at five. The range of the formula with an N = 463 was from 8.66 to 186.19, the mean being 63.53 with a standard deviation of 39.53.

An univariate procedure was performed on each variable for descriptive purposes yielding all the standard numeric values as well as a histogram, boxplot, and normal probability plot. Frequencies, ranges, means, standard deviation, etc. were all used to understand, analyze, and

explain the specific variable in relation to the regression equation.

The additional twenty variables in the model are shown in abbreviated form repeatedly. These variables and their symbols are:

- * administrative attendance (AdmA)
- * mini-evaluation of instructional focus (Mini)
- * number of participants (Part)
- * selection of site (Selsite)
- * incentives provided (Inc)
- * release time provided (RelTim)
- * time of training (TimTrn)
- * selection of teachers (SelTch)
- * training observed (TrnObs)
- * number of teachers (TchQua)
- * number of schools (SchQua)
- * student population as average daily attendance (ADA)
- * distance to nearest institute of higher learning with courses for professional development (MiCol)
- * source of the trainer (Trnr)
- * number of students on free or reduced lunch as an indicator of socio-economic status (SES)
- * number of administrators (Admin)
- * percentage level of ethnic distribution of minority populations (Eth)
- * gender of the training participant (Gender);
- * grade level taught (GdLvl);
- * type of course taught, academic or non-academic (Type).

Descriptive information derived from the univariate procedure are shown in detail in Figure 4.1, which gives numbers of students and teachers by site in each state, and Figure 4.2, providing categorical information about participants in the training as well as showing the variety of the group by grade level and other variations.

Figure 4.1
CHARACTERISTICS OF SITES

Site	# of Participants	# of Students
Arkansas		
A	22	245
B	16	390
C	41	475
D	16	396
E	19	265
Louisiana		
A	19	1575
B	10	2047
N. Mexico		
A	50	626
B	44	587
C	13	385
D	23	206
Oklahoma		
A	20	872
B	5	438
C	23	172
D	33	450
E	11	1179
F	23	300
G	40	543
H	17	467
Texas		
A	14	926
B	5	72
C	39	609
D	14	1625
E	37	469
F	56	1253
G	12	975
H	11	1180
I	18	106

Figure 4.2
Characteristics of Teachers

Category	Frequency	Percent	Percent
Grade Level		(Cell)	(Cum)
1 K-3	123	26.6	26.6
2 4-6	114	51.2	51.2
3 7-8	63	13.6	64.8
4 9-12	110	23.8	88.6
5 all	18	3.9	92.4
6 admin	9	1.9	94.4
7 other	17	3.7	98.1
9 unknwn	9	1.9	100.0
Type Course			
1 acadm / elem	365	78.8	78.8
2 non-aca	46	9.9	88.7
3 admin	8	1.7	90.4
4 other	29	6.2	96.6
9 unknwn	15	4.4	100.0
Gender			
0 female	365	78.6	78.6
1 male	88	19.0	97.6
9 unknwn	10	2.4	100.0
SelTch			
1 volunt	67	14.5	14.5
2 selec	133	28.7	43.2
3 mandat	263	56.8	100.0
9 unknwn	0		

A general linear models procedure was used rather than an ANOVA since the variables being studied in relation to the dependent variable were of differing and unequal cell size. Using the IBM statistical analysis system (SAS), the dependent variable, formula, was found to be significant in the model with twenty variables. The model, with 43 degrees of freedom, had an F value of 23.83 with a probability less than 0.0001 of occurrence due to chance alone. The original intent had been to set at an alpha level of 0.01.

The following tables exhibit the two procedures used with each variable. In the procedure illustrated by Figure 4.3 a Type III sum of squares computed how much that variable contributed to the model when the variable was entered into the model last, giving the numeric significance, the degrees of freedom, the F value, and the probability of occurrence due to chance alone.

An interesting difference in the significance level was noted when only a Type I sum of squares was considered, computing the variable's contribution to the model when the variable was entered in order established by the model.

Figure 4.3
General Linear Models Procedure
 Type III Sum of Squares (Variable Entered Last)

Source	DF	F Value	PR > F
AdmA	1	0.81	0.3679
Mini	1	46.94	0.0001
Part	1	8.04	0.0048
SelSit	3	22.92	0.0001
Inc	1	3.95	0.0476
RelTim	1	0.00	0.9913
TimTrn	4	1.61	0.1707
SelTch	2	10.45	0.0001
TrnObs	1	5.07	0.0248
TchQua	1	0.09	0.7590
SchQua	1	0.76	0.3840
ADA	1	7.13	0.0079
MiCol	1	0.35	0.5554
Trnr	3	7.05	0.0001
SES	1	20.71	0.0001
Admin	1	0.42	0.5179
Eth	2	7.02	0.0010
Gender	3	2.24	0.0835
GdlLvl	7	3.36	0.0017
Type	6	1.66	0.1282

In both general linear models procedures, selection of site had the largest contribution. In the Type I SS, release time and administrative participation were second and third in rate of contribution. In the Type III SS, mini-evaluation of instructional focus was second, and grade level taught was third. Figure 4.4 illustrates the Type I sum of squares significance levels. This figure shows that five variables were below the accepted level: number of participants; selection of the teachers; training observation (whether the training was observed in process or not); number of administrators; and the type of course taught. Later treatment supported the significance of all these variables except the first two.

The mean average for the formula (teacher implementation rate), using the general linear models procedure was 63.586. As for range, the lowest was 8.66; the highest was 186.19.

REGRESSION RESULTS

The regression equation to predict the criterion from predictor variables was established as follows:

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3$$

Y = teacher implementation

b_1, b_2, b_3 = partial regression coefficients

A stepwise multiple regression procedure was employed to predict the best combination of twenty-four variables as predictors of the dependent variable (teacher rate of implementation) called formula. The procedure was carried through forty steps. An explanation of 56.94 percent of contribution to the predictor model was established by selecting eight variables for the criterion prediction at Step 8. Going beyond Step 8 increased the percentage of contribution only slightly, by one percent or less per variable added. After eleven steps, predictors for categories labeled as "unknown" entered. At Step 20, a predictor that had entered at Step 10 was removed, beginning a consistent removal occurrence in the next several steps. None of the initial eight predictors from Step 8 were removed until after Step 22, maintaining a constant probability ratio of $p > .01$, in fact $p > .0001$.

By examining the B values' percentage of contribution to the model, it is clear which predictor variables contributed the most in explaining the prediction. Each category (vector) of every qualitative predictor was considered as a separate predictor for highest accuracy in the prediction model.

Figure 4.4
General Linear Models Procedure

Type I Sum of Squares/ Variable Entered in Order

Source	DF	F Value	PR > F
AdmA	1	106.26	0.0001
Mini	1	35.41	0.0001
Part	1	1.24	0.2659
SelSit	3	133.83	0.0001
Inc	1	17.81	0.0001
RelTim	2	69.58	0.0001
TimTrn	4	25.06	0.0001
SelTch	2	1.58	0.2078
TrnObs	1	3.19	0.0749
TchQua	1	8.12	0.0046
SchQua	1	30.63	0.0001
ADA	1	30.63	0.0001
MiCol	1	23.18	0.0001
Trnr	3	13.29	0.0001
SES	1	11.27	0.0009
Admin	1	0.46	0.4978
Eth	2	9.21	0.0001
Gender	3	4.86	0.0025
GdlLvl	7	4.24	0.0002
Type	6	1.66	0.1282

Figure 4.5
Definition of Vectors Table

V1	=	administrative participation in training
V7	=	incentive provided
V11	=	training time during school time
V25	=	trainer (institution of higher education)
V39	=	ADA over 52 % ethnic (minority) population

From the Stepwise procedures, Step 8 was accepted as the model to be analyzed for recommendation since the variables combined explain/predict 56.94 percent of the implementation rate. The equation, $Y = a + b_1x_1 + b_2x_2 + b_3x_3$, is shown below with B values.

$$60.059 = 22.95 V1 + 22.27 V7 + 42.02 V11 - 21.92 V25 - 13.13 \\ - 14.48 \text{ MiCol} + .04 \text{ SES} - 3.11 \text{ Adm}$$

Figure 4.6
Stepwise Regression Step 8 Table

	B Value	F	Prob > F
Intercept	60.059		
V1	22.954	47.49	0.0001
V7	22.267	40.83	0.0001
V11	42.017	235.49	0.0001
V25	-21.918	34.12	0.0001
V39	-13.125	20.67	0.0001
MiCol	-14.479	41.83	0.0001
SES	0.042	90.63	0.0001
Admin	-3.109	17.59	0.0001

R Square = 0.5694
r = .75

To examine the effects of multicolliniarity a Pearson correlation was performed on each variable, resulting in relatively low to moderate correlations. The highest correlations of the eight variables in the predictor equation are shown below:

Figure 4.7
Pearson Correlations

AdmA	highest correlation is with Eval =	- 0.4158
Inc	highest with MiCol =	- 0.3505
Tmtrn	highest with SchQua =	- 0.2845
Trn	highest with SelTch =	0.4766
Eth	highest with SES =	- 0.5210
MiCol	highest with Seltch =	0.3449
SES	highest with ADA =	0.6655
Admin	highest with TchQuan =	0.5258

SCATTER PLOTS

Plots were generated by site, by model, and by the squared residuals of the model to secure an accurate selection of outliers. Clear deviations of the implementation formula for both predicted and actual performance were identified using the squared residuals model, which gave clearer

distinction of the outliers. Thirteen outliers were investigated, but no generalizations or conclusive deductions were possible as will be evident from the discussion.

Of the thirteen outliers, six participants were from one site, three from another, two from a third, and one each from two additional sites. Five sites were represented by all, both deviations on the high and the low end of the residual squared plot (four on the negative end and 9 on the positive). To off-set any possible implications, the six deviations from a single site had two negative and four positive. When charted with all variable information, there were no consistent, significant differences to be noted between any of them. There was a mix of gender and grade level, -- and all taught academic courses. In analyzing the plots by site, no explanation was evident regarding the individual deviations. An interesting pattern of homogeneity of performance seemed to be evident at each site, where implementation seemed to be in groups of horizontal lines rather than a scatter or a diagonal range. Because the groups were generally small, however, a generalization about those patterns is not appropriate. Perhaps the only generalization that can be made from the outliers is that in all cases the actual implementation was lower than the

predicted: there were no outliers indicating performance that was higher than predicted.

HYPOTHESES

Most hypotheses presented here were based on research, experience, and literature from non-rural settings. Each will be considered here in light of the data and procedures discussed already. The hypotheses are presented in the same order as previously described, grouped by classification and reported in the following sequence:

1. The Pearson correlation coefficient between the dependent variable and the independent variable;
2. The F value and probability factor from the general linear models (GLM) procedure (Type III Sum of Squares);
3. The contribution of the independent variable as a predictor of the dependent variable from the stepwise regression;
4. A conclusion as to whether or not the study did or did not support the hypothesis.

Hypotheses with probability (P) equal to .05 or less will be accepted; those with a P greater than .05 will be rejected.

Teacher related

Hypothesis 1: Rate of teacher implementation of a new strategy varies inversely with the grade level taught.

The correlation coefficient between grade level and implementation formula was a negative, - 0. 21641. It was the third highest contributor of the model in the GLM procedure with an F value of 3.36 and a $P > 0.0017$. In the regression model, the importance of this variable and its vector (denoting high school level) clearly supports that grade level is an important predictor of the dependent variable.

Conclusion: Due to the inverse correlation and the implementation increasing with increasing grade level, the hypothesis must be rejected. The data indicated that the reverse of the hypothesis was in effect, that the higher the grade level, the higher the rate of teacher implementation.

Hypothesis 2: Rate of teacher implementation of a new strategy varies according to whether type of courses taught are academic or non-academic.

Type of course taught had a very low, negative correlation coefficient of - 0.16403 providing limited evidence through the Pearson correlation.

The GLM procedure, however, showed that this variable contributed 8th in rank to the model with an F value of 3.36 and $P > 0.0017$. The vector (V39) representing academic type courses entered the stepwise procedure at Step 7 with a high significance factor of 0.0001.

Conclusion: Based on the evidence presented above, the hypothesis is accepted.

Hypothesis 3: Rate of teacher implementation of a new strategy varies according to gender of the participant.

The Pearson coefficient for this variable was low and negative at -0.199987. One of the few variables not significant to the model in the GLM, this variable ranked eleventh in its contribution to the model with an F value of 2.24 and $P > 0.0835$. The vector representing female did appear in the stepwise procedures at Step 16, but again had a $P > 0.02$ below the rate accepted as significant for this study.

Conclusion: The evidence presented here does not support this hypothesis; it is rejected. Although a large majority of the participants were female, there were no indications of correlations or interrelatedness of gender to implementation performance.

Hypothesis 4: Rate of teacher implementation of a new strategy varies according to how teachers were chosen for training (ie. volunteer, mandated, or selected).

Selection of teachers for the training had a low correlation with the formula for implementation in the Pearson, 0.02629; however, in the GLM, it was a significant contributor (ranking 5th) to the model with an F value of 10.45 and a $P > 0.0001$. Vector 18 representing "selected for training" (rather than volunteered or mandated) entered the regression equation at Step 18 with a low contribution and a low $P > 0.0277$.

Conclusion: Not enough evidence supports that this variable can be discussed with certainty. Without further substantiation of significance, the hypothesis is rejected. The relevance of the content of the training intervention as well as the perceived need for the training were elements not studied; those elements and other training related variables might produce helpful information in future studies.

School related

Hypothesis 5: Rate of teacher implementation of a new strategy

varies inversely with the size (student population, ADA) of the school.

The variety in size was from 72 students to 2,047 for the twenty-eight sites (mean size of 664). Size of student population as a variable had a Pearson correlation coefficient of 0.23958, not significant; however, a probability level of $P > 0.0079$ in the GLM that was tenth in its contribution to the model with an F value of 7.13. Entering the regression equation at Step 22, it was not highly important to the prediction with a $P > 0.0022$.

Conclusion: There is not sufficient evidence to support this hypothesis; therefore, it is rejected; student population of a school did not influence the rate of implementation of improved teaching strategies significantly in this study.

Hypothesis 6: Rate of teacher implementation of a new strategy varies inversely with the percentage of ethnic distribution of student population.

Ethnicity of student population had a Pearson coefficient of 0.23337. In the GLM with a $P > 0.001$, it was seventh in contributing to the model (F value = 7.02). High ethnicity at a site was represented by V29 and

entered the regression model at Step 15 with a $P > 0.0001$. The other vectors of ethnicity were not found to be significant or contributing to the prediction.

Conclusion: Not only is this hypothesis rejected, the reverse seems to be supported. Implementation was higher at sites where high ethnicity was present. No supported evidence explains this predictor because of the lack of correlational significance; however, an increased attention to "at-risk" students who are frequently identified among minority populations might have a relationship to this variable. It follows that teachers of these high risk populations are seeking staff development and new strategies to become more effective in their teaching strategies.

Hypothesis 7: Rate of teacher implementation of a new strategy increases inversely with the number of students eligible for free or reduced lunch (a socio-economic status indicator, SES).

Another broad range quantitative variable, SES ranged from 10 to 1578 with a mean of 318. The Pearson coefficient of 0.02775 was low; however, the GLM procedure indicated this variable as 6th in contributing to the explanation of the model with a probability level of 0.0001 due to

chance alone. The variable entered the stepwise regression at Step 4 and remained through all forty steps. At 4 degrees of freedom, it had an F value of 25.12 with $P > 0.0001$.

Conclusion: The number of students from a low SES category seems to be a relevant predictor of implementation of training. In this case, the higher the SES number, the higher the implementation predicted. Therefore, this hypothesis is rejected as opposite from what was indicated by this study. As in the case of Hypothesis 6, targeted groups of "at-risk" students are frequently among those who are in this category. The relation to their needs and the needs of their teachers needs may be related to this as a predictor at this time. No conclusive or relevant data were analyzed to substantiate the causality of this as a predictor, and could be the focus of further study.

Hypothesis 8: Rate of teacher implementation of a new strategy increases with the presence of administrative participation in the training.

The correlation coefficient from the Pearson for AdmA was 0.26729 moderately low. While the GLM procedures showed this variable of limited significance with an F value of 0.81 and a $P > 0.3679$, in the

stepwise it entered at Step 5 with a significance factor of $P > 0.0001$ and remained in the equation until Step 24.

Conclusion: The significance of the stepwise procedure alone supports the acceptance of the hypothesis. The combination of the interactive nature of the training intervention combined with the presence of an administrator may have resulted in undocumented technical assistance or support from a local source that was not investigated. Regardless of the interrelations that might have occurred as a result of this variable, its presence and importance as a predictor of high implementation is important.

Hypothesis 9: Rate of teacher implementation of a new strategy increases with the presence of a positively perceived effectiveness measure of the instructional focus at the site school.

Taken from a major part of a mini-survey of a perceptual school effectiveness measure, this variable was referred to as Mini in the procedures. Its Pearson correlation coefficient was 0.23545, moderately low, but its value to the GLM was quite high with the second largest contribution to the explanation of the model in the Type III sum of

squares with an F value of 46.94 ($df = 1$) producing a $P > 0.0001$. Mini was also significant with a $P > 0.001$ in the regression, entering the equation at Step 14 and remaining through Step 40.

Conclusion: Sufficient support allows the acceptance of the hypothesis. Considering that the intervention was to improve teaching strategies in all curricular areas and at all levels, the instructional focus of the school was likely to be strongest at sites where implementation was highest. Looking at the boxplots by site, the highest implementation occurred where the Mini was highest.

Hypothesis 10: Rate of teacher implementation of a new strategy increases with the distance of the school from a four year institution of higher education.

The highest correlation in the treatment occurred with this variable's Pearson correlate coefficient, a negative 0.49299. Even though its significance was not indicated in the GLM where it was 0.5554, the strength of it as an predictor of the dependent variable was so strong that it was the first predictor to enter the stepwise model, contributing 24 percent of the prediction.

Conclusion: The reverse of the hypothesis is supported by the data. This hypothesis is not only rejected, but a case for the reverse should be accepted. Schools within fifty miles of an institution providing professional growth opportunities had a higher teacher implementation rate than those further away. Other factors not studied might explain causality, even the obvious, that schools near such institution have different teacher selection possibilities.

Hypothesis 11: Rate of teacher implementation of a new strategy varies according to how the site was selected for participation in the training.

The moderate correlate coefficient from the Pearson for this variable was 0.37212. With its contribution when considered alone at first place in the GLM, its importance is clear. An F value of 22.92 showed a $P > 0.0001$. V4, the symbol for self-nomination as the type of selection to participate in the project, the variable entered the stepwise at Step 11 with a probability level of 0.0015.

Conclusion: The hypothesis is accepted. This variable is directly related to goal match, whether the content of the training was relevant to the goals of the school. Although that variable was not analyzed formally

in the regression, the case analysis revealed that where sites had a stated goal that was related to the content (improved thinking), implementation tended to be higher.

Trainer related hypotheses

Hypothesis 12: Rate of teacher implementation of a new strategy varies inversely with the nearness of the trainer to the school, ie. greater implementation with school-based trainer, less with state department trainer.

An insignificant correlation coefficient of 0.06986 in the Pearson, but fourth in contribution to the model in the GLM with a probability factor of 0.0001 makes this variable complicated to analyze. Vector 25 (IHE trainer) entered the stepwise regression at Step 3 with the same probability factor that it had in the GLM, $P > 0.0001$. Vector 26 (local trainer) entered at Step 27 with a $P > 0.0079$, yet none of the other vectors for that variable entered.

Conclusion: The hypothesis is accepted. In case analysis, several factors contributed to possible explanation of this variable as a contributor. In several sites the combination of incentive, administrative support, and nearness to a college also were sites where the trainer was

from a local (school personnel) or an IHE. Although the correlation from the Pearson analysis was not significant, the right combination of the variables with others eliminated by vector may have some relevance.

Training related

Hypothesis 13: Rate of teacher implementation of a new strategy increases with the presence of an incentive for the training.

With a moderately high correlate coefficient of 0.33624 from the Pearson, this variable was not a highly significant contributor to the explanation of the model in the GLM with a $P > 0.0476$. In the stepwise, however, V7, the vector for incentive provided, entered the equation at Step 6, contributing 2 percent of the total equation with a probability due to chance alone at 0.0001.

Conclusion: The hypothesis is accepted. The significance of this variable to the prediction of high implementation is even more significant when considered with the combination of other variables that might also be identified as incentives, such as release time or training during the school day.

Hypothesis 14: Rate of teacher implementation of a new strategy varies

inversely with time of day of the training.

Time of training had a Pearson correlation coefficient of 0.46844, one of the highest correlations of any of the variables in this study. In the GLM, the Type III Sum of Squares was relatively low with an F value of 1.61 and a probability rate of 0.1717. Represented by V11 (early and during school) to V15 (late and after) in the stepwise, V11 entered the equation at Step 2 with a partial contribution of 12.8 percent and a $P > 0.0001$, remaining in the equation through all forty steps.

Conclusion: The hypothesis accepted as stated. The similarities with the variable of incentive or release time considered above, further comment about this variable would be redundant.

Hypothesis 15: Rate of teacher implementation of a new strategy increases when training is conducted during release time.

The Pearson correlation coefficient was an insignificant negative of -0.05009 for this variable. There was a moderately high correlation between release time and time of training at 0.40767 which is reasonable considering that the highest implementation was predicted to occur during the school day, which would be release time. Entering the stepwise

regression procedure at Step 29 showed a level of acceptable significance, $P > 0.057$. The importance of this as a variable may be contingent upon other undescribed factors.

Conclusion: No supporting evidence for this variable causes the hypothesis to be rejected as it is; however, considering that during the school day is release time of one sort, there is support that this factor with qualifiers might be predictive or supportive of staff development.

Hypothesis 16: Rate of teacher implementation of a new strategy increases with the size of the group participating in the training.

The range of this variable was from 5 to 56 with a mean of 30. The Pearson correlate coefficient showed relatively no correlation, being 0.00667 with a $P > 0.8862$. Although the variable entered the regression at Step 19 with a significant $P > 0.0001$, it contributed less than 1 percent to the explanation of the model.

Conclusion: The hypothesis cannot be accepted on this limited evidence. Like student population, there seemed to be no information from either the regression or from case analysis to indicate a size factor

to be considered in the rate of implementation.

Hypothesis 17: Rate of teacher implementation is consistent with final evaluation of level of preparedness by participants of site group.

Represented by the symbol Eval in the data treatments, this variable had a significant correlation with the formula because it was a modifier of the sums of performance indicators, a part of the dependent variable. The Pearson correlation coefficient was 0.47776. Since it was part of the formula, it was not considered separately in the GLM, nor would it appear in the stepwise since it was part of the dependent variable. The relation to high performance was evident on the scatter plots by site; schools with higher evaluation means had teachers with higher numbers of lesson plans and activity logs also.

Conclusion: Although the statistical evidence is not as clearly delineated as with other variables, this hypothesis is supported, and can be accepted.

Hypothesis 18: Rate of teacher implementation of a new strategy is affected by a combination of the above hypotheses.

The combination of multiple predictors represented by the stepwise regression equation discussed earlier with a significance level of $P > 0.01$ is illustrated by Step 8 in the regression procedure. A further explanation beyond eight variables might be desirable in some instances.

Conclusion: The hypothesis is accepted. For purposes of this study, the eight predictors that explain 56.9 percent of the predicted implementation are more than sufficient to support this hypothesis.

The analyses and results of this study provide a beginning for planning to diagnose rural school contexts prior to initiating interventions for improvement strategies in the area of staff development. The findings here are discussed further in the next chapter with conclusions and recommendations.

CHAPTER FIVE

SUMMARY OF THE STUDY

The purposes of this study were to provide a predictive equation of rural school context variables that support staff development for school improvement and to provide an empirical study of a large scale rural intervention. Drawing from research, literature, and practice based on nonrural populations and locations, this research sought to verify or define contextual variables in diverse rural schools representing a broad spectrum of types and populations so that context found to be most supportive to a staff development intervention for improvement could be described.

Eighteen hypotheses were tested in the process of examining data on twenty-four variables related to the context and process of a staff development intervention. The variables grouped in categories were:

Teacher: Lesson plans generated by participating teachers

- Activity logs kept by teachers
- Evaluation of training
- Grade level taught
- Type course taught
- Gender
- Method of selection for the training

Training: Time of day

Release time provided
 Number of participants
 Administrative participation
 Incentives provided
 Attendance, monthly logs and other records

Trainer: Source of employment
 Observation of training

Site: Method of selection
 Student population size
 Number of teachers and administrators
 Ethnic distribution of students
 Socio-economic status of students
 Distance from institution of higher learning
 Mini-survey of school' instructional focus

While the project of this intervention is continuing, the data used in this study were drawn only from the first year of the effort. The continuity of the effort on one hand and the need to protect the separateness of the data for this specific study presented two minor difficulties, (1) a desire to immediately apply findings of the research underway and (2) a desire to expand the data collection to include pertinent learnings from the second year's effort. The maintenance to the original proposed study was done effectively, providing a baseline of research from which other studies may depart.

CONCLUSIONS

As the general hypothesis proposed early in this study suggests, a number of contextual variables, related to teachers, school, training, and trainers have a correlated effect on the rate of teacher implementation of new or improved strategies and behaviors as a result of training. The identification, description, and relationship of predictive contextual elements found to be supportive of such efforts has value to school improvement efforts. By accepting Step 8 in the Stepwise Regression Procedure performed in this study, predictor variables were found to contribute 56.9 percent of the explanation of the model. The eight variables were:

1. Training time during the school day
2. The number of students eligible for free or reduced lunch (SES)
3. Administrative participation
4. Nearness to an institution of higher education
5. Incentive is provided
6. High school level teachers
7. Number of administrators in district.
8. Trainer from IHE

Each of these predictor variables has been described in detail in at least two other parts of this study, the literature review and the hypotheses conclusions. A short discussion of the implications that may be drawn from this list is appropriate.

Training time during the school day

The significance of the first variable, training time during the school day, is the cost factor involved. When planning for staff development, administrative decisions about budget are pertinent. Costs escalate rapidly when substitute cost is necessary for systematic staff development. Alternative ways to release teachers during the day for training are needed if administrators are to heed this predictor. A difficult variable to provide, this predictor had great importance in the model. Although it is a costly way to provide staff development, the cost benefits must be considered if implementation is to occur.

Number of students eligible for free/reduced lunch (SES)

The number of students from a low SES category was a relevant predictor of implementation of training. In this case, the higher the SES number, the higher the implementation recorded. Observations and soft data concerning the sites where high poverty was present, and the trend of increased attention to "at-risk" students who are represented frequently

in groups high in SES percentages such as these lead to the conclusion that this factor deserves additional attention. With the conclusion that teachers had a higher rate of implementation at sites where there was a high SES indicator, the number of students eligible for free or reduced lunch (SES) as a stimulator of implementation is perhaps most easily explained in light of recent focus on high risk populations of students who are frequently also in the poverty ranks. As teachers seek additional strategies for efficacy, it fits that those in schools with high percentages of these students would participate fully in staff development that offers help in this task.

The reasons for the importance of this variable other than professional concern for the learners are yet to be adequately described. Since the size of student population of a school did not influence the rate of implementation of improved teaching strategies significantly, one might conclude that socio-economic description of the student body is more important than its size.

Administrative participation

One of the strongly recommended features of effective staff development from the literature and research in nonrural settings, this variable was strongly supported by the data in this study. In sites where

self-nomination/selection to participate in the project occurred implementation was also high. Although the correlation between administrative participation and selection of site was only 0.25717, observational data suggest that other supportive efforts not studied may contribute substantially when administrative participation is present.

The importance of this variable was strongly expected, when two sites that began the project did not continue because of substantive administrative changes that affected support and commitment to the effort. As mentioned in the literature review, rural situations with small numbers of administrators are more strongly influenced by this variable either positively or negatively.

Nearness to an institution of higher education

Teachers in schools within fifty miles of an institution providing professional growth opportunities were shown to have a higher teacher implementation rate than those further away. The hypothesis related to this variable was rejected since the data supported the reverse to be the case. The regression indicated that the closer to an IHE, the higher the implementation rate was at a school. This may have several explanations not proved here, but deduced. Considering that another high predictor was the trainer from an IHE, there may be an interrelatedness not

discovered by these data. Nearness to an institution of higher education and a trainer from such an institution certainly must be correlated; however, even more information may be related to these two factors as being important contributors to the prediction of high implementation.

The possible incentive represented by college credit, advanced or additional certification, or advancement on career ladders as a result of such activity all support this situation. An added occurrence in the intervention was possible extra technical assistance available by this variable. Possible influence of three variables (ie. trainer, nearness of IHE, and related incentives), especially when all were present at a site could certainly have had a significant effect. An extensive study of participants at sites near IHE's might reveal answers not found here (ie. work on advance credit that relates to the training, or advance certification in a related area).

Incentive is provided

No upset to the existing data, the evidence of an incentive such as a stipend, career ladder advancement, college credit, even release time as predictive of higher implementation rates in rural schools was like that in nonrural counterparts. Indicative of teacher willingness to put extra time and effort into a project when an incentive is offered should stimulate a

search for ways to provide these as motivators for implementation.

High school level teachers

A strong indicator, this variable presents the possible implication of the value of piloting implementation projects with this level of teachers for higher success rates. The factor that implementation was higher among high school level teachers was not surprising when considering the content for the training. Although the intervention was designed for all levels and all disciplines, the attention and relatedness to higher level thinking was associated frequently with older students and content related courses from the onset of the project. The experience and training of secondary teachers has been traditionally heavier in the area of critical thinking than it has been for elementary teachers. A correlation between the training content and other variables was not within the scope of the study, but might prove interesting and explanatory.

Although the study revealed that the higher the grade level of the teacher the higher the rate of implementation was, it did not investigate the relationship of the content to the implementation. Before a generalization is made about this level as an exclusive target audience, further study of the relation of the type of course taught to the content of the training should be accomplished.

(8) Trainer from an IHE. The study recommends areas of further research. (TES)

Number of administrators in district.

The regression indicated that as implementation increased, the number of administrators decreased. The Pearson correlation showed moderate correlations between administrator number and the mini-survey (-0.33144), participants (0.39785), and incentive (0.35578), but none of these explain the negative correlation.

As a predictor, the number of administrators in the district seemed difficult to understand at first. As case analysis was used, a relation to numbers of special programs with special directors or administrators seemed difficult to determine. It is likely, but not substantiated by the data, that the more special programs and administrators there are in a small district, the more segmented the instructional focus and interaction of the faculty members. If this is the case, those administrators and programs by sheer existence would not be conducive to implementation of a whole faculty effort. The negative relationship of more administrators and lower implementation may also be indicative of lack of clear support or administrative attendance to the training.

Trainer from IHE

This variable had some moderately high correlations with other variables (ie. participant, 0.39646 and selection of site, 0.34093 both at the

$P > 0.0001$ level). Some of the highest correlations, however, occurred between selection of teachers and training observed (0.47664 and 0.46178), also with acceptable probability levels of $P > 0.0001$. Because of the interrelatedness of these other variables, further study of this variable is recommended before generalizations are made. One of the limitations mentioned early in this study was the element of multiple trainers to deliver the training. Style, rapport with participants, experience with the content of the training are variables that were beyond the control of the project, yet could have had possible effect on outcomes.

The analysis of outliers provided limited substantive conclusions. While this was a hoped for source of information, it, too, may have been asking too much from a well used data base. Additional data treatments with other statistical procedures might provide further understandings of these deviations.

For the purposes of this study, Step 8 was selected because of its high rate of explanation with an acceptable significance level for all predictors. For replication purposes, to prescribe possible implications for this study as applied to a specific school preparing for an improvement intervention, further steps might have additive benefits with each successive step.

RECOMMENDATIONS

Based on the results of this research, further study in several areas or topics are suggested by the findings here:

1. A way to find or afford incentives for teachers;
2. Ways of providing and supporting the best combination of predictor variables found to be important in this study;
3. A study of interrelatedness of trainer to training and participants;
4. A study the relationship of content to participants;
and
5. A pilot use of the prediction equation with specific sites, experimenting with variables.

While definition of a predictable, supportive context for rural school improvement through staff development was the primary purpose of this study, the work provides a basic foundation of research for similar interventions that can be used to assist rural schools to design improvement through staff development with high implementation expected. Application of the prediction equation presented here, extended beyond Step 8 according to site-specific needs or prescriptions might be the most important recommendation to conclude this study.

APPENDIX A
SITE LETTER OF INVITATION

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APPENDIX A



SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY
211 East Seventh Street Austin Texas 78701 512/476-6861

August 27, 1987

The Southwest Educational Development Laboratory (SEDL) invites the Quemado district to participate in a rural, small school initiative effort that will focus on staff development to improve the teaching of thinking skills. Using proven methods, this effort will enlist the cooperation of the State Department of Education, intermediaries (ESC's, Coops, etc.), and institutions of higher learning to provide training and technical assistance to participating schools.

SEDL will develop and provide training for the trainers who will be working with your school(s), drawing from and using the experience, expertise, and research of experts in the area of thinking skills. The expense of the trainers, the materials that they will use, and the materials that your school(s) will need for the training will be paid for by SEDL. Other services related to the project will be:

- access to SEDL project staff for liason and information about related resources
- quarterly publications about the effort and related issues.

Your district was recommended to SEDL for participation in the project in collaboration with the State Department of Education, intermediaries, and/or others. If your district is committed to thinking skills process/program implementation, then we believe that this effort can be of significant benefit. In order to accept this invitation your district will need to meet several criteria:

- make a commitment to participate for the upcoming school year (1987-88)
- provide release time for teachers once a month from October 1, 1987 through March 31, 1988 for 2 to 4 hours of inservice
- allow access to teachers during school hours on campus periodically for technical assistance and data review (as per a mutually arranged schedule)
- provide support to teachers and trainers with services and facilities necessary for inservice training/follow-up
- provide access to sources of data on project activities and school practices

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The Rural Small Schools Initiative staff at SEDL, under the general direction of Drs. Martha L. Smith and David L. Williams, Jr., will be coordinated on a day-to-day basis by Mrs. Gayla M. Lawson. They, and all of the other SEDL staff who will work on this project, are very enthusiastic about the opportunity to work with you and your district during the coming year.

Your letter of acceptance is eagerly awaited, and we urge you to respond promptly if you wish to participate. We look forward to a long and mutually productive relationship with the Quemado Schools.

If you should have questions or concerns about the project, please feel free to call Mrs. Lawson at (512) 476-6861.

Sincerely,

Preston C. Kronkosky
Executive Director

PCK/jdm/lc
cc: Dr. Martha L. Smith
Dr. David L. Williams, Jr.
Mrs. Gayla M. Lawson

APPENDIX B
SITE DATA COLLECTION FORM

Please return by
January 22, 1988

**SEDL's Rural, Small Schools Initiative
Texas Demonstration Site Data Collection
1987-1988**

Name of School District _____ County _____
Name of Superintendent _____
Mailing Address _____ Street Address _____
City _____ State _____ ZIP _____
Phone _____ Cong. Dist. # _____ TEP Box _____ (Electronic Mail #) _____

Schools/Staff

Name of Administrator	Name of School	Grade Levels	# of Teachers	# of Students
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Number of Other Professional Staff by Position:

Counselor _____ C&I _____ Nurse _____ Business Manager _____ Chapter 1 _____
Librarian _____ Athletic Services _____
Other _____

Students

Total School Enrollment _____ Number on Free Lunch _____ Per Pupil Expenditure \$ _____
Student Ethnicity _____ % White _____ % Hispanics _____ % Black _____ % Other _____
Students Bussed _____ % Number of Bus Routes _____ Longest Bus Route in miles _____ in time _____

Instructional Programs/Calendar

Number of Instructional Days _____ Number of Inservice Days _____
Programs: _____ Migrant _____ Chapter 1 _____ G/T _____ ESL _____ Bilingual _____
Other _____

Describe an instructional program of which you are especially proud. _____

List your district's three main concerns/needs in order of priority.

1. _____
2. _____
3. _____

Please attach a description of your school district as used for proposals, brochures, or other reporting purposes (i.e., annual report).

Go on to next page.

TEXAS**Extremely Important, but optional:**

1. What is your definition of a rural school district? _____

2. What is your dropout rate? _____
3. If "at risk" students are identified as a group of students experiencing difficulty or failing as learners, what percentage of your student enrollment is "at risk"? _____%
4. What percent of your students graduate from high school? _____ What percent of your high school graduates seek further education /training? _____
5. Attach the latest, available standardized achievement test summaries for your school district.

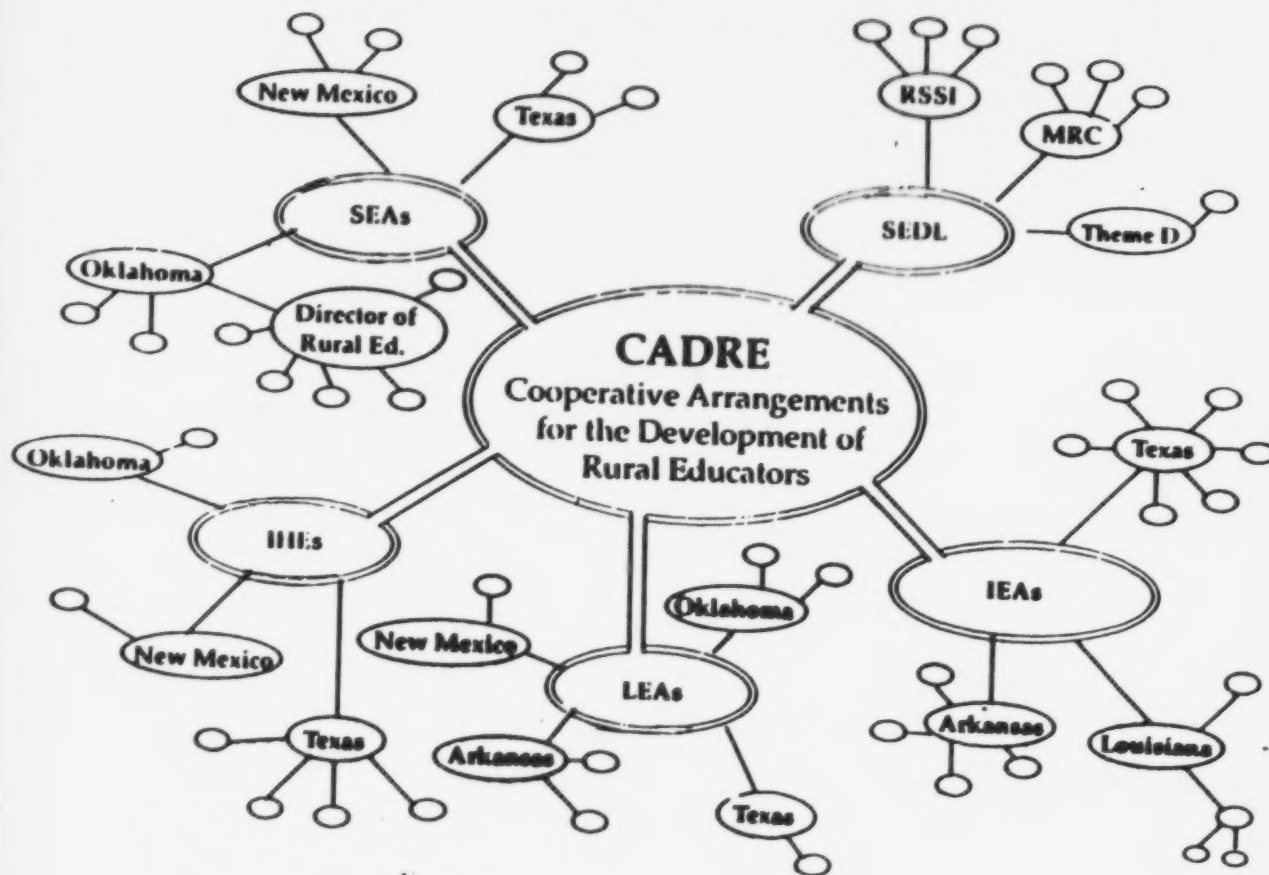
Thank you for your assistance.

Person Providing Information: _____ Date _____

APPENDIX C
CADRE CONFIGURATION

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APPENDIX D
TRAINING SESSIONS CALENDAR

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APPENDIX 2
SEDL's RURAL, SMALL SCHOOLS INITIATIVE
 INSERVICE SESSIONS AT DEMONSTRATION SITES
 1987-88

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5/25/88

SITES	SESSIONS						
	# of part.	1	2	3	4	5	Follow-up
Arkansas	23	Nov 30	Jan 28	Mar 14	Apr. 11	Apr. 11	April 25
	14	Dec. 10	Jan. 12	Jan. 28	Feb. 10	Feb. 24	March 16
	18	Nov. 9	Jan. 11	Feb. 8	Mar. 6	Apr. 11	May 2
	23	Dec. 14	Jan. 4	Jan 18	Feb. 1	Feb. 29	March 7
	19	Nov. 16/23	Dec. 7	Jan. 25	Feb. 8	Feb. 22	March 28
	20	Nov. 5	Dec. 2	Jan. 20	Feb. 10	Mar. 9	May 27
Louisiana	20	Oct. 28	Nov. 19	Dec. 9	Jan. 14	Feb. 18	March 24
	12	Dec. 2	Jan. 20	Jan. 27	Feb. 24	Mar. 9	March 23
New Mexico	47	Jan. 26/ Feb. 23	Mar. 8	Mar. 22	Apr. 12	Apr. 26	April 26
	65	Nov. 16	Jan. 28	Jan. 28	Feb. 17	Mar. 24	April 13
	13	Nov. 13	Nov. 20	Dec. 11	Jan. 15	Feb. 12	March 4
	21	Oct. 27	Nov. 13	Dec. 10	Jan. 14	Feb. 11	March 10
Oklahoma	12	Dec. 10/Jan. 20	Jan. 26	Feb. 17	Mar. 16	Apr. 13	April 27
	6	Dec. 2	Jan. 12	Jan. 28	Feb. 18	Mar. 3	March
	21	Nov. 25	Dec. 17	Jan. 14	Feb. 18	Mar. 24	May 9
	32	Nov. 10/24	Dec. 8	Jan. 28	Feb. 16	Mar. 29	April 5
	14	Nov. 6	Dec. 14	Jan. 18	Feb. 15	Mar. 14	April 4
	24	Nov. 25	Dec. 18	Jan. 15	Feb. 19	Mar. 9	March 18
	41	Nov. 25	Dec. 18	Jan. 15	Feb. 19	Mar. 4	April 15
	21	Nov. 17	Dec. 9	Jan. 22	Feb. 11	Mar. 1	April 5
Texas	15	Nov. 11	Dec. 9	Jan. 20	Feb. 17	Mar. 23	April 5
	16	Nov. 6	Dec. 11	Jan. 29	Feb. 26	Apr. 8	May 6
	46	Oct. 28	Nov. 30	Jan. 15	Feb. 15	Mar. 10	March 24
	15	Oct. 19	Nov. 19	Dec. 7	Jan. 25	Mar. 1	April 6
	38	Oct. 22	Nov. 16	Dec. 8	Jan. 21	Feb. 11	March 2
	55	Nov. 11	Dec. 2	Jan. 13	Feb. 10	Mar. 9	April 13
	30	Nov. 9/16	Dec. 3	Jan. 7	Feb. 4	Mar. 17	March 17
	11	Nov. 6	Dec. 4	Jan. 22	Mar. 4	Mar. 25	May 12
	22	Oct. 22	Nov. 20	Dec. 1	Jan. 5	Feb. 9	March 8
	16	Oct. 28	Nov. 18	Dec. 16	Jan. 20	Feb. 17	February 17

BEST COPY AVAILABLE

APPENDIX E
FINAL EVALUATION FORM

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EVALUATION FORM

Training Sessions on Student Thinking Skills

Instructions: Please assist us in improving our services to the region by responding to the following questions concerning the training you have received over the past few months on thinking skills. Please leave blank those questions that do not apply.

1. Please indicate how important you think it is for your students to be able to use each of the ten TACTICS listed below.

Attention Control:	unimportant	1	2	3	4	5	critical
Deep Processing:	unimportant	1	2	3	4	5	critical
Memory Frameworks:	unimportant	1	2	3	4	5	critical
Power Thinking:	unimportant	1	2	3	4	5	critical
Goal Setting:	unimportant	1	2	3	4	5	critical
Responsibility Frame:	unimportant	1	2	3	4	5	critical
Concept Attainment:	unimportant	1	2	3	4	5	critical
Concept Development:	unimportant	1	2	3	4	5	critical
Pattern Recognition:	unimportant	1	2	3	4	5	critical
Synthesizing:	unimportant	1	2	3	4	5	critical

2. Please indicate the frequency with which you ask your students to use each of the ten TACTICS listed below. Use the following scale to indicate the frequency that best describes your usage:

1 = Never 2 = Once a year 3 = Monthly 4 = Weekly 5 = Daily

Attention Control:	never	1	2	3	4	5	daily
Deep Processing:	never	1	2	3	4	5	daily
Memory Frameworks:	never	1	2	3	4	5	daily
Power Thinking:	never	1	2	3	4	5	daily
Goal Setting:	never	1	2	3	4	5	daily
Responsibility Frame:	never	1	2	3	4	5	daily
Concept Attainment:	never	1	2	3	4	5	daily
Concept Development:	never	1	2	3	4	5	daily
Pattern Recognition:	never	1	2	3	4	5	daily
Synthesizing:	never	1	2	3	4	5	daily

3. Please indicate the degree to which you have noted changes in the frequency with which your students have used the following skills over the last few months. Use the following scale to indicate the frequency that best describes your perception of their usage, giving no response for areas where you are unsure:

1 = Greatly decreased 3 = Remained the same 5 = Greatly increased

Monitoring of attention level	decreased	1	2	3	4	5	increased
Exploring various aspects of thought	decreased	1	2	3	4	5	increased
Memorizing lists of information	decreased	1	2	3	4	5	increased
Being aware of learning attitudes	decreased	1	2	3	4	5	increased
Setting directions for learning	decreased	1	2	3	4	5	increased
Monitoring responsibility for success	decreased	1	2	3	4	5	increased
Being aware of the import of concepts	decreased	1	2	3	4	5	increased
Learning concepts	decreased	1	2	3	4	5	increased
Organizing information	decreased	1	2	3	4	5	increased
Restating and summarizing information	decreased	1	2	3	4	5	increased

(OVER)

4. How useful were the lesson plans completed in training in helping you to implement each of the TACTICS?

not useful 1 2 3 4 5 very useful

5. How useful was the Consumer-Validation Process (CVP) in helping you to implement each of the TACTICS in your classroom?

not useful 1 2 3 4 5 very useful

6. Overall, how beneficial do you think your participation in the training sessions was in helping you to improve your students' thinking skills?

not beneficial at all 1 2 3 4 5 very beneficial

7. Overall, how prepared did you feel to use the techniques presented in the training sessions to improve your students' thinking skills?

not prepared at all 1 2 3 4 5 very prepared

8. What suggestions do you have for improving the training sessions?

9. What suggestions do you have for any follow-up activities to these training sessions that might further your skills in improving your students' thinking skills?

10. How were you selected as a participant for the thinking skill training?

Please tell us a little bit about yourself:

Grade level(s) taught: _____

Subjects taught (if applicable): _____

Years of teaching experience: _____

Prior to these training sessions, had you had previous specific, formal training in the teaching of thinking skills? Yes No

THANK YOU

APPENDIX F
TRAINER MONTHLY REPORT

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1987-88 SEDL'S RSS INITIATIVE

TRAINER'S MONTHLY LOG OF SITE INSERVICE AND/OR FOLLOW-UP

LOG FOR THE MONTH OF _____

INSERVICE SESSIONS

DATE: _____

TOPICS: _____

TIME: _____

NUMBER OF PARTICIPANTS: _____

TEACHERS: _____

OTHER: _____

OTHER TECHNICAL ASSISTANCE: CALLS(C)/VISITS(V)

C/V	DATE	PERSON CONTACTED	TYPE OF ASSISTANCE	COMMENTS

SUGGESTED MODIFICATIONS:

PLANNED FOLLOW-UP:

SIGNATURE OF TRAINER: _____

NAME OF TRAINER: _____ DATE SUBMITTED: _____

APPENDIX G
SITE OBSERVATION PROTOCOL FORM

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APPENDIX G

SEDL'S RSSI ON-SITE VISIT/OBSERVATION

1987-88

SITE: DATE: CONTACT:

PERCEPTIONS

APPEARANCE OF BUILDING
ADMINISTRATIVE COMMITMENT
STAFF ATTITUDES/RELATIONSHIPS
OTHER

ACTIVITIES/DISCUSSION

FOLLOW-UP

TRAINING:

PURPOSE CLARIFIED

PREPAREDNESS

ADHERENCE TO MATERIAL

ADHERENCE TO AGENDA

PARTICIPATION

SESSION: FIRST SECOND THIRD FOURTH FIFTH

OTHER

FOLLOW-UP

RECORDED BY

APPENDIX H
LESSON PLAN FORM

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ELEMENTS OF A LESSON PLAN (AN ADAPTATION OF THE HUNTER MODEL)

TEACHER'S NAME _____ SCHOOL _____

SUBJECT _____ GRADE _____ PERIOD _____ DATE _____

ANTICIPATORY SET (GETTING STUDENTS SET TO LEARN):**SETTING THE OBJECTIVE:****THINKING PROCESSES/SKILLS:****INSTRUCTIONAL INPUT:****MODELING (MODELING WHAT YOU MEAN):****CHECKING FOR UNDERSTANDING:****GUIDING INITIAL PRACTICE:****INDEPENDENT PRACTICE:****ENRICHMENT:****CLOSURE: (SUMMARY OF LEARNING)**

APPENDIX I
ACTIVITY LOG

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ACTIVITY LOG

NAME OF TEACHER _____ **GRADE** _____ **CONTENT AREA** _____ **SCHOOL** _____

GRADE

CONTENT AREA

SCHOOL

APPENDIX I

APPENDIX J
MINI SURVEY

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**SEDL's Rural, Small Schools Initiative, 1987-88 Follow-up Session
Teacher Mini-survey of Demonstration Site Characteristics**

Beside every indicator of each correlate are the numbers 0, 1, 2, 3, 4, and 5. Please circle one number that you feel best indicates the extent to which the correlate exists on your campus - 0 being absent; 1 being the weakest indication and 5 being the strongest. Remember this is your perception of how your campus appears to you, not how you wish it were, or how you think someone else views it.

	Absent		Weakest		Strongest	
	0	1	2	3	4	5
1. The school leadership effectively defines the school's mission, frames the goals, and communicates these to the staff, parents, students, and the community.	0	1	2	3	4	5
2. There is an orderly, purposeful atmosphere which is free from the threat of physical harm. The atmosphere is conducive to teaching and learning. Physical facilities are kept clean and attractive.	0	1	2	3	4	5
3. Teachers behave as if they believe all students can learn, accepting the challenge to teach them. These high expectations are conveyed to students and parents. Grading scales and mastery standards are set to promote excellence.	0	1	2	3	4	5
4. Instruction is the basis on which all major decisions made by the school administration and staff are grounded.	0	1	2	3	4	5
5. The school believes evaluation of the school's effectiveness should be based on student outcomes. There is evidence of regular assessment and evaluation of students, and staff for the purpose of improving student performance.	0	1	2	3	4	5
6. There is evidence that parents and other members of the larger community understand, support, and participate in the basic mission of the school, and are provided with avenues of significant roles in achieving this mission.	0	1	2	3	4	5

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